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THE ART OF EXTRACTION ; WITH A BRIEF NOTICE OF SOME OF ITS CASUALTIES.*

By Mr. Reginald E. Nicholls.

Mr. President and Gentlemen,—Proficiency in the art of extraction being of such paramount importance to the dental practitioner at the present time, I propose this evening laying before you a few practical remarks on the subject in order that we may profit by the discussion in which such a subject is prolific. The short time at my disposal must be my apology for the scant treatment the subject has received at my hands.

Mr. Tomes lays down the following conditions for fulfilment in the extraction of a tooth.

1.—The whole of the offending organ should be removed.

2.—It should be removed with as little injury as possible to the structures in which it is implanted.

3.—The patient should be spared all unnecessary pain in the operation, which, let me add, ought to be a more or less deliberate one. It is worth noting that no intelligent dentist would think of advising the extraction of a tooth, so long as there remained a fair prospect of its being restored to a state of usefulness.

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* A paper read at the Students' Society, National Dental Hospital.

Causes necessitating the extraction of teeth, may be considered under two heads.

1.—*Temporary Teeth* :—

(*a.*) Where they hinder the proper eruption of their permanent successors.

(*b*). Which are the subjects of alveolar abscess, of necrosis of the walls of the alveolus and of incurable pain.

2.—*Permanent Teeth* :—

(*a.*) Where they are the seat of incurable toothache.

(*b.*) In which alveolar abscess exists to such a degree and recurs with such frequency as to render the sacrifice of the tooth necessary.

(*c.*) Causing abscess of the antrum.

(*d.*) Wisdom teeth causing trismus.

(*e.*) Looseness causing irritation, and in some cases pain.

(*f.*) Broken or projecting teeth, causing ulceration of the tongue, cheek, or lips, often render it proper to remove them to prevent more serious consequences.

(*g.*) Epulis and polypus of the gum.

(*h.*) Fracture of the tooth ; exposing the pulp or destroying its form.

(*i.*) Necrosis, offensive caries, and loose stumps.

(*k.*) Regulation of the mouth.

(*l.*) Teeth long affected with chronic periostitis.

(*m.*) Diseased teeth which are the cause of neuralgia, disease of the maxillary sinus, dyspepsia, etc.

(*n.*) Teeth which have lost their antagonists, and are abnormal in position or which irritate the surrounding parts.

The proper condition of the instruments to be used :—

This is an important point, as much of the operator's success or failure will depend upon it.

The steel used should be of the best quality and temper, so that we may have the requisite strength without clumsiness.

The joints of the forceps should have slight play ; they must be neither tight nor loose, and they must be kept well oiled so as to be free from stiffness. The beaks of the forceps should have fine and sharp edges, if the latter become in the least degree everted, they should be reset on the stone immediately.

The working ends of all elevators should have a sharp keen edge, so as to cut into the substance of the tooth and take a fair hold.

Every instrument must be perfectly clean and aseptic ; for this purpose, boiling water, containing a little carbonate of sodium, will be found to be the best steriliser.

THE OPERATION OF EXTRACTION,

as performed with the forceps, may be divided into three stages.

1.—*The seizure of the tooth.*

The instrument being lightly applied to the tooth at the gum margin, should be driven as far along the fang as possible, gradually tightening the hold at the same time. If there be not sufficient penetration, there will be the risk of fracturing the crown when the extraction of the tooth is attempted.

2.—*The destruction of the membranous connection of the root or roots with the socket, together with a slight distension of its alveolar walls.*

To complete this, in those teeth which are not rotated, an inward, as well as an outward turn should be given to the tooth before attempting its removal.

3. *The removal of the tooth from its socket.*

If this be attempted before the second stage is completed, portions of the alveolus, with or without additional enclosed teeth, may be torn away. There is a case on record in which the floor of the antrum was torn away in this manner.

Before proceeding with some general remarks on the details of extraction, I will give Mr. Coleman's brief summary of the detaching movements that should be used before removing the teeth from their sockets.

Teeth of the Upper Jaw:—

Incisors and canines: slight rotary movements. I find teeth unusually firm in their sockets are best turned inwards and outwards before rotating.

Bicuspids : inward and outward movements.

Molars : inward and outward movements.

Teeth of the Lower Jaw:—

Incisors and canines, inward and outward movements.

Bicuspids : slight rotary movements. When these are very firmly socketed I find also there is an advantage in first turning inwards and outwards.

Molars ; inward and outward movements.

General Remarks.

Before commencing to extract a tooth, carefully examine it, and have at hand every instrument that may be required.

The patient should be placed in such a position, relative to the operator, as will afford the best light, and the greatest mechanical advantage.

The forceps must be properly held to avoid crushing the tooth which would follow squeezing them too firmly. The pressure should be regulated by passing the fleshy part of the thumb between the handles at the upper part of the forceps, and the little finger between the lower ends ; it should amount to no more than is sufficient to prevent the forceps slipping off the teeth.

The fore-finger and thumb, or the first and second fingers of the left hand should be placed, according to circumstances, on either side of the tooth to be extracted ; this not only steadies the head, so that all the power used is available, but at the same time the sense of touch informs the operator how his operation is proceeding.

When you have once applied your forceps to the toot keep your eyes on both until the tooth is in your hand. If removing several teeth or stumps, keep your eyes on the mouth whilst wiping the stumps out of the forceps on the napkin which should be on the patient's shoulder. These precautions will obviate removing the wrong tooth, or taking a sound tooth with an unsound one, caused by slipping of the forceps due to a plunge on the part of the patient.

Be careful to so apply the forceps that the beaks are in a straight line with the axis of the root. This becomes less easy as the curve of the forceps is increased.

When applying forceps to the teeth in the lower jaw, penetration may be assisted by the pressure of the fingers or thumb of the left hand.

When the teeth are unusually firm in their sockets, it is of great advantage to have the patient's head held by an assistant, but if this aid is not forthcoming, the operator, by placing one finger of the left hand on either side of the tooth to be extracted, and resting the palm and wrist on the patient's forehead firmly, can steady the head for himself. He can do the same by passing his left arm round the patient's head.

Laceration of the gums, and disturbance of the alveolus are to be avoided as much as possible, but *where the roots cannot be seized by any other means* there need be no hesitation in including the edge of the alveolus in the forceps, or in breaking through the thin alveolar walls.

It is also justifiable to excise a piece of an obstructive enamel wall, if it interferes with the application of the forceps.

In extracting upper teeth, the operator should keep his elbow down as low as possible, or there will be a corresponding loss of power if it is raised.

During the extraction of lower teeth, always support the jaw, or it may suffer dislocation. Some operators advise, in removing, say a left lower molar, that the left thumb should be placed upon the crowns of the teeth in front of the tooth to be extracted, and the jaw supported by the fingers placed beneath it. In gas cases they recommend that which I prefer should be done in all cases, namely, that the thumb should support the jaw from below, and the fingers placed above, so as to aid in controlling the tongue, as well as to push the cheek away from the forceps and admit light. Held in this manner the patient cannot possibly break away.

Mr. Salter advises that in removing lower teeth which—although loosened in their sockets—are still prevented from coming away by the locking of their fangs in the alveolus—the thumb or finger of the left hand should be placed upon the instrument over the crown in order that if the tooth suddenly gives way the forceps will not strike against the teeth in the opposite jaw and perhaps fracture a sound one.

It is a good plan to always turn the forceps first towards the weak wall of a tooth, whether it be labially or lingually, as you thereby drive the beak further down on that side and so obtain a firmer hold.

It is to be remembered that teeth standing alone and surrounded by firm bone are always more difficult to extract than one in a row.

In the case of abnormal teeth an unusual degree of resistance will be felt which would lead one to suspect an abnormal arrangement of the roots. With such we must deviate from the usual lines and deliberately, though cautiously, apply force in the direction where the least resistance is felt.

An ingenious way of keeping the mouth open when the prop has slipped in gas cases is to place the thumb behind the neck of the condyle and push it forwards whilst depressing the chin with the fingers. The method is very convenient where the Coleman's forceps are not handy as it enables the operator to get to work without loss of time, which would be especially precious in case of an anæmic patient.

If the operator suspects the hæmorrhagic diathesis in any patient (the appearance is usually fresh and even flushed, not anæmic) a few questions will usually settle the point. In such cases Mr. Underwood, following Mr. Smith Turner, suggests a preliminary course of ergot and sulphuric acid for a week beforehand, together with absolute rest, low diet, cooling drinks and no alcohol, or hot drinks.

When removing temporary molars it is not advisable to drive the forceps far down, if at all. Want of care in this respect may result in the removal of the capsule of the bicuspid.

The extraction of compound roots of upper molars.

(1) In some cases where the buccal and lingual crown walls are of doubtful stability, a continuous upward pressure should be exerted with the forceps, at the same time turning inwards and outwards cautiously.

As soon as the whole mass is quite loose an outward and downward movement will generally complete the operation.

(2) In other cases a useful pair of forceps is that which has a slightly curved cutting edge or a cowhorn to pass between the buccal roots. These are applied in such a way that, in the event of their failing to remove the whole of the roots together, it separates them completely, rarely failing to bring away at least one root.

(3) Or we may use the straight elevator in certain cases.

(a) either by passing it into the centre of the stump and carefully splitting it.

(b) or by inserting it between the buccal fangs thus separating the roots.

(c) or again by placing the elevator before or behind, (perhaps both), the whole mass, and either removing it entirely, or so loosening it that it will easily come away with the forceps.

It may be here noted that the first and second molars make excellent fulcra for the elevator, but if the wisdom or second bicuspids are to be used in this way it should be done carefully.

(4) Lastly, as the pulp in these teeth is always invariably dead, it is a good plan to drill them nearly apart, the stump forceps easily does the rest.

The extraction of compound roots of lower molars, is effected by means similar to those employed in the upper jaw, but there need be no hesitation in using the wisdom tooth as a fulcrum.

The lower splitting forceps have two cutting edges which grasp the stump labially and lingually, and either remove it or else separate the fangs. The lower cowhorn forceps may also be used in the same way.

The extraction of upper wisdom teeth is usually most easily effected by a circular movement with the forceps from the crown of the tooth downwards, outwards, and upwards in the direction of the zygomatic process, a corkscrew-like action.

The extraction of lower wisdom teeth is generally best effected with the straight elevator. When the forceps are used they must be turned more inwards than outwards, as these teeth almost invariably have a far thinner plate of alveolus on the lingual than on their buccal aspect, the direction should also be backwards more or less, as the roots most frequently take that direction.

The use of stump forceps.

When to use the full and when the stump forceps in the upper and lower jaws is a matter of judgment, as is the question as to the best method of proceeding when it is desired to remove molar stumps; but in spite of the various opinions held, and diverse teaching, I should like to say a few words on the subject.

First, in case of the upper molar stumps, which are but feebly united, the stump forceps may be applied either to the palatine and posterior buccal, or to the palatine and anterior buccal fangs. The former method has the advantage that these roots being more nearly in a line with each other, will often come away together in the forceps in the event of the stump breaking up, whereas in the latter case the roots being more out of line with each other are apt to cross, and usually only one root comes away in the forceps.

Then in the case of lower molar stumps in a similar state to these just mentioned, it is usual to advise the extraction of the posterior one first, but their condition being equal, I find the anterior the better one to seize, as it is usually the larger, therefore, when the two roots are obviously firmly connected, and the object is to bring them away united, I maintain that the anterior is the proper root to lay hold of.

The Elevator is the most generally useful instrument the dentist possesses, and there is hardly a tooth or root which cannot be removed by it.

In operating, it may be employed as a simple lever, or better still, this movement combined with a slight rotary one. Many teeth are removed with a single effort, but some require a second or even a third application.

Cases in which the elevator is useful :—

(1) For lower wisdom teeth, and the stumps of lower molars and bicuspids.

(2) In overcrowded mouths, to remove a tooth, or so loosen that it can easily be picked away by forceps.

(3) In cases of closure of the jaw due to an impacted wisdom tooth, or periostitis round the molars. A straight elevator having a deflected point is often indispensable for the removal of such teeth.

Generally speaking the elevator should not be used where the forceps will do as well; it is said to cause more pain previous to, as well as subsequent to the operation.

Precautions to be observed in using the elevator. To guard against accidents :—

(1) Place the forefinger within half-an-inch of the tip of the blade.

(2) Apply the instrument with a firm hand and reticent power ; in this way the operator is able to suspend all force the instant the tooth is dislodged.

(3) When operating in either jaw, place the forefinger and thumb, or first and second fingers of the left hand, as the case may be, on either side of the point of application ; if necessary, one of the fingers can be used as a fulcrum. Again, you feel what degree of movement is taking place within the alveolus, but above all, should the instrument slip, you have the satisfaction of stabbing your own finger in lieu of being cited in the list of casualties.

Neglect of such precautions as these has resulted in serious accidents, such as division of the transverse facial artery, transfixion of the soft palate, or tongue, or cheek, and many others.

Never use the elevator to remove upper wisdom teeth, the tuberosity may be broken off, and perhaps with it the hamular process of the internal pterygoid plate, causing deafness on that side.

The Type of Elevator to use is not that so commonly in use' I refer especially to many of the curved ones, their working ends being often far two long and thick. On this account they lack penetration and cause unnecessary pain and disturbance of the alveolar process.

The spear-headed, straight instrument recommended in Mr. Tomes' work, has gone out of fashion, having given way to a more useful instrument of which specimens are placed upon the table.

CASUALTIES OF EXTRACTION.

These are condensed as much as possible, the following being enumerated by Mr. Salter.

1. Fracture of the tooth.
2. Fracture of the jaw.
3. Accidental extraction of the wrong tooth.
4. Taking out two teeth instead of one.
5. Removing capsule of growing permanent tooth in extracting its temporary predecessor.
6. Tearing gum.
7. Wounds produced by slipping of the elevator.
8. Extracted tooth falling into air passages.
9. Extracted tooth falling into the pharynx and being swallowed.
10. Crushing the inferior maxillary nerve.
11. Dislocating the lower jaw.
12. Breaking one tooth in extracting another.
13. Cutting lip in removing a jagged extracted tooth.
14. Forcing tooth or tooth-fang into antrum.
15. Forcing tooth-fang into abscess excavation in maxilla, to which I may add as being unfortunately somewhat frequent :—

Including, and thereby wounding the tongue or teeth in the forceps.

Cutting the lower lip with the lower teeth by pressure of the forceps or hand during the extraction of upper teeth.

Sensitive sprouting.

Pain after extraction.

Excessive hæmorrhage.

Such a formidable list will be considerably reduced in the experience of the operator whose methods are conducted upon sound principles, but certain of them will happen at times, for instance :—

(*a*) Fracture of the alveolus is a common necessity in extracting certain teeth, but fracture of the lower jaw is only likely when its substance has been considerably reduced by abscess.

(*b*) Accidental extraction of a wrong tooth in an unusual way is exemplified by the specimen handed round. In this case the operator carefully drove his stump forceps straight down over the edges of the anterior fang of a first molar and proceeded to remove the same, but the root being much curved backwards, and its upper edges fragile, the latter were broken up in the attempt, but the septum of alveolar process between the sockets of the molar and second bicuspid came away bringing with it the second bicuspid firmly adherent to the process, the forceps themselves being altogether clear of the tooth.

(*c*) A sound tooth may be accidentally removed with an unsound one on account of the narrow space through which the latter must pass, or to organic union with contiguous teeth, or by starting a fulcrum tooth with an elevator, or by fibrous connection of the neighbouring teeth.

(*d*) An extracted tooth owing to a peculiar conical root, may jump out of the socket when the forceps are applied, and fall into the air passages if the patient be under gas.

(*e*) Crushing the inferior maxillary nerve fortunately only involves the transient loss of sensation as a rule. Mr. Salter mentions one case where the loss of sensation was permanent, however.

(*f*) Apart from the usual methods of reducing dislocations, this reduction may often be accomplished whilst the patient is still unconscious, supposing the dislocation to have occurred during the extraction of teeth under a general anæsthetic, by pressing upon the head of the condyle with the thumb in a backward direction on the outside of the cheek.

(*g*) Forcing teeth or roots into the antrum may be unavoidable, and so may

(*h*) Forcing teeth or roots into an abscess excavation in the maxilla.

(*i*) Sensitive sprouting due to fracture of the tooth's crown in an attempted extraction should be obviated by cutting away the exposed part of the pulp with a sharp spoon excavator under an anæsthetic, local or general, and finally applying strong carbolic acid to the surface.

(*j*) Pain after extraction is usually brief and soon subsides unless there has been periostitis, or where septic forceps have been used.

Where there is no inflammation the pain is frequently due to a bending or fracture of the alveolar walls, so that the periosteum is torn or stretched. This would be obviated by pressure of the thumb and finger on each side of the socket immediately after extraction; this, by the way, is a constant practice with many dental surgeons, and is said to lessen hæmorrhage.

TREATMENT.—In all cases of pain after extraction, the vacant socket should be sponged out with a loosely rolled pledget of cotton wool steeped in soda-phenique, or in the following substitute :—

Acid Carbol. Glac. ʒi.
Liq. potassæ. ℥i.
Aqua ad ʒviij.

This will usually give great relief, and the wool may be suffered to remain a day or two if the pain tends to return on its removal. Usually one or two applications will dispel the severe pain, so that the wool need not be left in the socket. Should this fail, the sufferer should be directed to hold a strong and hot decoction of poppy heads in the mouth, being careful to swallow none, and to renew the mouthful when it ceases to feel hot. This should be continued until the pain abates, which may be expected within an hour or two.

Iodoform powder and tinctures 'of myrrh and pellitory have also been used.

(*k*) Hæmorrhage of an excessive nature is usually due to hæmophilia, which is a capillary oozing; if unchecked, it goes on to hallucinations, delirium, fainting, coma, death.

TREATMENT. This consists of the application of hot or cold water, ice, tannin, matico leaves, nitrate of silver, perchloride of iron, and pressure in the socket. The actual cautĕry, tying the common carotid artery, and digital pressure on the common carotid artery against the vertebral column, are also methods sometimes employed.

As a rule, the treatment resolves itself into the use of hot or cold water or ice in mild cases, and of pressure in the presence of matico leaves or perchloride of iron in severe cases. Personally I have had equal success with matico and perchloride of iron, but prefer the latter, as the cotton wool used to convey the drug, is so quickly and effectually packed up the root canals. It does not matter which we use, the point is to obtain great pressure in the tooth socket by means of plugs tightly rammed up the root canals, filling the socket up to the level of the gum, and upon this placing a pad, (it may be lint, gutta-percha, etc.), so as to slightly raise the bite. Then the application of a four-tailed bandage will ensure continuous pressure. Before placing the plugs in the root canals it is of the first importance to clear away all clots of blood. Next syringe the socket well out with cold water, dry quickly with cotton wool and pack the canals as described. The patient must be instructed to keep the four-tailed bandage on, to keep quiet, though not to lie down, to drink no alcohol and no hot fluids of any kind, and not to smoke. The plugs may be cautiously removed in from twenty-four to forty-eight hours.

It will have been observed that owing to the exigencies of time, the scope of this paper has been confined to the methods more generally in use at the present time. The historical aspect, which is no less interesting, is necessarily excluded from this paper.

ALVEOLAR HÆMORRHAGE.*

By Mr. J. S. Hughes.

In laying before you a short paper on Alveolar Hæmorrhage, or perhaps more correctly speaking, excessive hæmorrhage after the extraction of a tooth, my object is rather to elicit the opinion of those present than to contribute anything new; and to start a good discussion. I feel quite unable to bring before this Society anything which its members have not heard of and practised before, and if this paper is not as original as you would like it to be, I can only trust to your encouragement to smooth away the difficulties. Of all the emergencies with which we, as Dentists, have to deal, the one of excessive and prolonged hæmorrhage after the extraction of a tooth, or teeth, is the one that requires our prompt and most decided treatment. Fortunately, long continued and obstinate bleeding after the extraction of a tooth or teeth, is not a very common consequence, in fact, we may look upon it as being very rare considering the enormous number of times the operation is performed. At the same time we must not forget that several fatal cases are on record, with the details of which I will not weary you, as they are to be found in the numerous text books and journals. This troublesome hæmorrhage is of a peculiar character; it is not a rapid arterial discharge immediately following the vascular rupture which the tooth extraction causes, but a continuous abundant flow of blood welling up in the empty socket. It is not the discharge of any considerable arterial trunk that may have been wounded, but the passive bleeding of the entire disrupted surface from an inability of the vessels to accomplish a cure by the closure of their broken ends. This excessive bleeding is influenced by two circumstances; the state of the parts, and the predisposition of the patient; and it may be primary or secondary. Ordinarily, the bleeding ceases within half-an-hour after the operation, it is, however, more profuse when the extraction has been performed for periodontal trouble, but if it is all reasonable needs no further interference than slight pressure with the fingers, and washing the mouth out with ice cold water, to which has been added a little Phenate of Soda.

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* A Paper read before the Manchester Odontological Society.

I will now, with your permission, consider for a few minutes the various causes of this excessive bleeding, and will take first what is known as Hæmophilia, or the Hæmorrhagic diathesis, which is a subject of very peculiar interest and far from being thoroughly understood. It may be the result of heredity, or it may be a temporary disposition to bleed which is present in some diseases, sea scurvy and purpura affording the most striking examples.

I had a case in which the bleeding occurred without there being any wound. Blood was rapidly flowing from between the canine and lateral in the upper jaw on right side; this had been going on without the patient seeking any aid for about two weeks, (so the patient said), the teeth were perfectly sound and fast. The patient was in a pitiable condition of exhaustion and bloodlessness. I arrested the hæmorrhage by tightly packing between the teeth a plug of cotton wool soaked in Fletcher's carbolized resin, the patient, however, died soon after. I found, on enquiry, he had been in the hands of a quack doctor, but, becoming alarmed, sought proper aid too late. Hæmorrhagic diathesis manifests its presence by a peculiar tendency to bleeding from any part of the body, or into any cavity, on the slightest provocation, and by the difficulty there is in arresting the hæmorrhage when it does take place. The dentist should always have before him the possibility of his patient being a subject of this diathesis, as it is not always possible to say that the patient in the chair is a bleeder or not; very frequently, those having every appearance of being likely to bleed, not doing so, and those who seem not likely, being just the ones to bleed the most.

Sir W. Jenner states that in these cases of hæmorrhagic diathesis, "the tissues are soft, and bruise easily. The blood is slow in coagulating, although it coagulates as firmly as in health; that is, blood is formed rapidly and there is a tendency to plethora of the small vessels, and when the patient is looking his best, injuries have the worst effect, and spontaneous hæmorrhages are most likely to occur."

With the medical treatment of these cases we have nothing to do.

Patients, as a rule, are aware of the tendency from former experiences, and many are so afraid that they positively refuse to have any more teeth out, preferring rather to suffer any pain on account of the alarming hæmorrhage following a former operation.

I do not think we need in every case refuse to extract a tooth from a bleeder, but precautions ought to be taken beforehand, by having the patient prepared by proper medical treatment. Immediately the tooth is removed, plug the socket in a way which I will shortly describe. Never remove more than one tooth or root at a time, and be very careful to wound the surrounding tissues as little as possible. A good precaution is to ascertain from a suspicious-looking patient if he has ever had any uncomfortable effects from an extraction before, but although we may often anticipate such effects by due preliminary enquiry, it too often happens that they come on suddenly and quite unexpectedly.

The sanguine temperament, characterised by moderate plumpness of person, and firmness of flesh, hair red or light chestnut, eyes blue, complexion fair and florid, skin soft and thin, the blood vessels large, circulation active, the pulse full and frequent, the countenance animated; such is the description of a patient liable to active hæmorrhage, and with whom it is always wise to plug the socket after extraction, and be on the safe side.

I will now briefly draw your attention to the second cause of excessive bleeding, viz., the state of the parts surrounding the tooth, or roots, caused by periodontal inflammation of an acute or chronic form. We are all too familiar with the state of the mouth in these cases; the excessive bleeding is here caused by the vessels having lost their natural tendency to contract through the long standing inflammation, and the blood its property of forming a firm coagulum or clot.

By primary hæmorrhage we mean the bleeding immediately following the removal of a tooth, and if excessive is easy of control. Plugging is not always necessary, pressure with the fingers for a few minutes, and washing the mouth with ice cold water to which has been added a little phenate of soda is sufficient, but the secondary hæmorrhage is much more difficult of control, and usually occurs under the following circumstances:—

A patient has a tooth removed, suppose we say in the early part of the day. Nothing unusual is noticed, the bleeding ceases in a normal manner; the patient goes to bed and wakes up in the night, or early morning, to find his mouth full of blood, and that a considerable quantity has been running from it during sleep. He feels faint, and, unless assistance is obtained, fatal syncope may supervene. The cause of this secondary hæmorrhage is of a constitutional, rather than of a local, character, and does not necessarily point to a hæmorrhagic diathesis. It seems rather to be dependant upon a diseased condition of the muscular coats of the blood vessels, than upon a want in the blood of the power to form a clot, as in these cases of secondary hæmorrhage we generally find a very large clot hanging from the open socket.

And herein lies another danger to the patient, for if by any means this clot (which I have seen of very large size, almost filling the mouth) became detached, and got into the throat of an exhausted patient, he might be choked before aid could be given. There is a particular form of this kind of hæmorrhage which occurs in women, when menstruation is imminent or in process. After the extraction, the bleeding ceases only to recur some hours afterwards, and becomes continuous, and obstinate. These cases may often be recognised by their obstinate refusal to yield to local means, and when we have a case of this kind, I think it better to at once call in the regular medical attendant, and let him make the necessary enquiries, and treat the case, the bleeding doubtless being a vicarious manifestation of the periodic function.

With patients at a comparatively advanced period of life, profuse bleeding sometimes occurs owing to the coats of the vessels having become stiffened by the presence of a deposit within their substance, and they consequently lose the power of contraction. The treatment of this excessive hæmorrhage after tooth extraction divides itself into two parts, the *local* treatment rightly belongs to the dentist, I think ; the general to the *medical* practitioner, who in all cases of alarming hæmorrhage, or where local means fail, ought to be called in.

Therefore it is only with the local treatment that I shall deal.

This essentially consists in the application of styptics, with continuous pressure upon the bleeding surface. Styptics belong to the astringent class of remedies, and may act either chemically or mechanically, the chemical styptics coagulating the blood exuding from the part, at the same time stimulating the tissues to contraction; whilst the mechanical, such as lint, cotton wool, or matico leaf, arrest the blood in their meshes, or absorb it until it coagulates, and thus arrest the hæmorrhage. Anything which would increase the wound, or add a fresh one, is contra-indicated; the actual cautery, or ligature of an arterial trunk, such as the common or external carotid, are not to be recommended, as they would probably be worse than useless where the hæmorrhagic diathesis was well marked. Pressure on the carotid in the side of the neck by means of the thumb, or points of the fingers, might control the bleeding in an extreme case. The use of escharotics, like nitrate of silver, is attended with great disadvantage; the action not being limited to the interior of the bleeding alveolus, the surface of the wound becomes extended and the difficulties of the treatment enhanced.

Perchloride of Iron is an objectionable application, the clot formed being soluble in the blood. Matico leaf is highly spoken of, but I think possesses no advantage over cotton wool which in simple cases makes an admirable plug. Matico leaf contains no appreciable quantity of Tannic Acid, it is useless as an internal styptic, it has no real astringency; its action is simply mechanical as a plug, and for this reason, when rolling up the leaf, the rough side should be kept outwards, the roughly reticulated under surface entangling the blood and forming clots. A plug of cotton wool, dipped in a saturated alcoholic solution of Tannin, answers very well. It has a powerful local astringent action, owing to its power of coagulating albumen, and the clot formed by this drug is not soluble in the blood. Few remedies, however, are more successful than Turpentine; in my hands it has never failed. It acts by coagulating the albumen of the tissues, and also by causing contraction of the smaller vessels. When administered internally, it passes readily into the blood and is very efficacious in bleeding from various organs of the body; it is also reputed to have the power of checking bleeding in the hæmorrhagic diathesis, and, therefore, I think we have in turpentine a most valuable remedy and one that is usually at hand in every house.

There is, however, another preparation, viz:—Fletcher's Carbolized Resin, which is a solution of Resin and Carbolic Acid in Chloroform, and this preparation has certainly a most perfect control over the hæmorrhage after tooth extraction, It is pleasant to use, and agreeable to the patient as far as taste and smell are concerned; it also quickly relieves the pain, which often follows the extraction of a tooth. It is best applied by soaking a strip of amadou, slightly larger than the root of the extracted tooth, with the carbolized resin and packing firmly in the empty socket; I have not found it necessary to use any kind of compress or bandage.

And now briefly to summarize the treatment upon which the life of a patient may depend.

First, thoroughly clear the mouth, then syringe the socket well out with warm water, and phenate of soda. Take a strip of lint, soaked in some styptic, preferably turpentine, carry it firmly down to the end of the socket, and build this plug of lint up until it projects a little above the gum. Take a good sound cork and cut one end in the form of a saddle to just fit over the socket above the lint, place in position so that when the mouth is closed, direct pressure will be brought over the plug and alveolar margins. Leave the front teeth about half an inch apart, for this allows of swallowing with a certain amount of ease, and also of the introduction of small pieces of ice into the mouth, which is often very refreshing to the patient. The jaws should then be very carefully bound up with a four-tailed bandage, the patient placed in the horizontal position with the head and shoulders slightly raised, the room kept cool, and all hot and spirituous drinks avoided.

When all hæmorrhage has ceased, the bandages and compress may be removed, but leave the plug in the socket until it loosens and comes away itself; it must never be forcibly removed, as the bleeding would certainly be brought on again. With the carbolized resin, as I said before, I have not found it necessary to use any compress or bandage, which certainly is a great boon to the patient. I may say that I have not used anything else than the carbolized resin for some two years past, and have never failed in stopping some very bad cases of excessive hæmorrhage ; in two that I can think of, the bleeding had been going on for quite two days. A fortnight ago I had a case, a female patient, I removed four incisor and one canine roots in the upper jaw, in the early part of the day; the bleeding ceased before she left the surgery. About four o'clock in the afternoon she came back greatly alarmed, the bleeding had returned immediately on her return home, and had never ceased. On examination I found blood flowing from all the sockets, very freely from the canine. I put in a plug of amadou, soaked in carbolized resin; the bleeding ceased in a few minutes and never returned.

In conclusion, allow me to impress upon you the great desirability where there is any suspicion of liability to hæmorrhage to plug the cavity at once, before the patient leaves the Surgery, with amadou soaked in carbolized resin : it will certainly prevent secondary hæmorrhage and this is the hæmorrhage most to be feared. Besides, it may save you having to turn out of bed in the early hours of the morning, and may also save the patient from the kind attentions of his friends, which usually consist in getting him to swallow as much brandy and water as they can get him to take, and placing him in front of as big a fire as they can make. All this aggravates what they want to stop, and the longer a case is allowed to go on before it is treated, the more difficult it becomes. It now only remains for me to thank you for the patience with which you have listened to this imperfect paper, and I can only hope that if it has not been profitable, it may have been interesting.

THE TEETH OF SCHOOL CHILDREN.

From a report just published we learn that an examination has just been made of the mouths of 480 boys on board the training ship *Exmouth.* The report points out that 937 teeth need filling; that 391 teeth call for extraction; and that ninety-seven mouths possess teeth irregular in their position. Mr. W. B. Paterson has noted the condition of every tooth on a chart specially designed for the purpose by the Committee of the British Dental Association. A further aid to precision has been introduced by the adoption of the method of classification of children's dentures, designed by Dr. Cunningham. The report concludes with a series of recommendations which we trust the Metropolitan Asylums Board may adopt in its entirety. Among the more important are :—The appointment of a qualified dental surgeon at a yearly stipend of £100. The provision of a suitably equipped dental surgery. The presentation every month of a short report. showing clearly the number of teeth filled and extracted. Lastly, the Committee recommends that in order to cope with the heavy work of putting the teeth of the boys at present on the ship to rights, the dental surgeon should be allowed to engage the services of a qualified dental assistant for the first six weeks at a weekly salary of four guineas.

British Journal of Dental Science.

LONDON, JAN. 2nd, 1893.

THE SALE OF POISONS.

It is a matter of common knowledge that the ease with which deleterious substances can be obtained leaves a great deal to be desired in the way of regulating their sale, and this, too, in spite of certain Acts of Parliament. Reports of Coroners' inquests frequently show that almost any member of the Community, provided with a few pence and sufficient ability to proffer his request, can procure some poisonous substance with which to attempt the injury of himself or others. It is true that by the Pharmacy Act of 1868, the State has endeavoured, and no doubt successfully, to restrict the sale of the ordinarily recognized poisonous drugs, and, amongst other powers, the Pharmaceutical Society is enabled to recommend to the Privy Council, from time to time, additions to the Schedule of Poisons. In this way Chloral Hydrate, and Nux Vomica, have been declared poisons within the meaning of the Act.

Few people will feel inclined to argue in favour of free trade in poisons, that is, in the sense that anyone should be allowed to buy and sell such things indiscriminately. We imagine that the large majority of those who watch the public interests will welcome the decision recently given at Bloomsbury County Court, which by preventing grocers from selling so-called "patent" medicines containing poison, thereby confirms and strengthens the monopoly, rightly, as we think, entrusted to Chemists. Any unregistered person may keep a "drug-store," but he may not sell nor compound poisons, and hitherto all kinds of dealers have been in the habit of selling proprietary medicines, there being a section in the Pharmacy Act which provided for the exemption of "patent" medicines. As there is reason to think there may be an appeal from the decision mentioned above, we merely point out that there was a good discussion as to what a "patent" medicine really is. It is, however, permissible, as well as interesting, to refer to a former stage, which paved the way for the latest action of the Pharmaceutical Society. Last April a Treasury prosecution resulted in a legal judgment that proprietary medicines, or remedies, which contained scheduled poisons must, in spite of and in addition to the government stamp affixed, be labelled "Poison." One would have thought that the logical consequence of this was evident, in face of the Pharmacy Act; but, at first, it seemed as if Chemists regretted the necessity of labelling such popular articles with a word which might frighten customers. It soon, however, appeared that the powers under the Act had not received proper attention and enforcement, and although there were not wanting alarmists to point out the "awkward" results expected to follow, the action of the Council of the Pharmaceutical Society must surely be commended. That Body, indeed, possibly needs continued stimulation, for the *British Medical Journal* has pointed out that whereas the restriction of the sale of poisons within its proper channel is the particular function of the Pharmaceutical Society, yet this public duty will have to be performed with greater energythan has been hitherto manifested. A greater deterrent effect would no doubt be produced if a list of the penalties recovered, in the numerous cases during the past year, were published, but it seems there is a legal difficulty in the way. Many cases are settled out of court, and do not get reported, as we believe was the case in one instance where penalties were claimed from a registered dentist who had sold small quantities of laudanum.

With regard to the accumulation of penalties, there is a point of interest in view of two recent decisions. In the first, the Apothecaries' Society appealed, in the divisional Court of Queen's Bench, from the decision of the Derby County Court Judge, who refused to inflict a penalty in more than one offence occurring on the *same* day. He regarded three separate acts (with *different* purchasers) as one comprehensive (or single) offence, and Mr. Baron Pollock, and Mr. Justice Hawkins, upheld this view and refused leave to the Society to appeal further. In the second case the Croydon County Court Judge ordered payment of six penalties at the instance of the Pharmaceutical Society. Here the offences were on *different* days, but the purchaser on each occasion was the *same* individual.

PASSAGE OF A DENTURE THROUGH THE ALIMENTARY CANAL.—A case was reported not long ago, to the Medical Society of Amiens, in which a man swallowed his artificial teeth during sleep. The piece was of an ordinary shape, with six teeth (three in the front, two at the right end, and one at the left) and measured six centimetres in its longest diameter. The patient awoke in the middle of the night with suffocation, and the sensation of a foreign body in his throat. All his efforts to expel it were in vain, and after attempts had been made to withdraw the foreign body from the œsophagus, it descended into the stomach and the patient was relieved. No further treatment was adopted, except that two days afterwards the patient took a purgative, and two hours later, (fifty-four from the accident), passed his denture by the bowel, without pain, and without his knowledge.

FRENCH VISITORS.—Last month, Mons. F. Touchard, a member of the Council of the Paris Dental Hospital and School, paid an official visit to England at the instance of the Minister of the Interior. The object of the mission was to study the organisation of dental teaching ; and a Report will be made to the Minister, based upon the visits to the various schools. M. Touchard, who is also Secretary to the Editorial Staff of our contemporary *L'Odontologie*, was accompanied by M. le Dr. Louis Thomas, Librarian to the Paris Medical School. Both gentlemen proved amiable representatives of their Country, and showed much interest in dental matters.

A CASE OF TRAUMATIC ANEURISM.—At the Clinical Society of London, Mr. Wainewright recently read the notes of an unusual case of "Fracture of the Lower Jaw." A man aged 23, was admitted into Charing Cross Hospital, with concussion of the brain and fracture of the left jaw. An abscess formed on the right side and was opened, the patient leaving the Hospital in twenty-five days. He returned in eleven days with fresh abscesses on the right side which were treated. Later, there was a pulsating swelling in the parotid region, and sharp pain. The house surgeon, considering the pulsation to be merely transmitted from the carotid artery, made an incision, and a small quantity of pus escaped. This was followed by a gush of blood from a traumatic aneurysm. It was also discovered that there was an unsuspected fracture just below the right condyle of the jaw. The common carotid artery was tied, but hemiplegia and dementia slowly developed a fortnight afterwards. The mental symptoms slightly improved in the course of time.

THE NEW UNIVERSITY FOR LONDON.—A special meeting of the Metropolitan Counties Branch of the British Medical Association, has been held for the purpose of discussing the question of a University for London. Mr. Eastes, in a historical narrative, alluded to the various schemes which had been proposed, and it was stated that the Commissioners, now sitting, seemed very desirous to know what was the collective feeling of the members of the Association. Mr. George Brown pointed out that whereas the entries of students were increasing in the Provinces, where degrees could be obtained, those students attending London Schools had decreased in numbers. Mr. S. J. Hutchinson declared that the teaching in London was not deficient in any way, and that it would be an easy solution of the difficulty, if every student, wishing to obtain a M.D. degree, should pass the matriculation examination of the London University. A resolution in favour of a degree in medicine being placed within reach of London Students was carried unanimously. In a further discussion, Professor Horsley said it was clear that the University of London had no power within itself to reform itself, since it was out of contact with the teaching in London, and therefore, they must have an additional University. The meeting recorded its opinion in favour of a teaching university in and for London, and decided to approach the members of Parliament sitting for metropolitan constituencies, in order to lay before them the views of the Branch.

THE PRESENCE OF PSOROSPERMS IN CANCER.—Mr. Jackson Clarke has read a paper to the Pathological Society, in which he described certain appearances in epithelioma as due to psorosperms, and held that these bodies were the cause of carcinoma. He stated he had traced all the changes in the life history of the parasite, except the encysted condition. In four cases of squamous epithelioma, taken as they came, he found the structural evidence full and complete. The parasites make their way between the epithelial cells and pass in large numbers into the connective tissue spaces. Although Mr. Clarke had no doubt that all cancers would prove to be due to psorosperms, other members who spoke considered his statements too bold.

THE GENERAL MEDICAL COUNCIL'S WARNING.—The correspondence we publish on this subject shows a diversity of opinion which was only to be expected. One phase of the question, however, is not there represented, for we believe that certain dentists are so elated with the Council's action that they are signing a petition to that Body, asking for still further favours, and that practitioners who advertise shall be considered in the same light as those who employ unregistered assistants. We expect to find that the Council already requires a little breathing time, and would suggest that to urge fresh action so soon seems a little ungrateful. Perhaps, however, the petitioners scarcely regard their request in the light of a favour, but more as a restitution of rights. This latter, we think, it would be difficult to prove, and in any case we can only consider the wording of the petition in the light of a pious expression of opinion as to what should constitute infamous and disgraceful conduct, in a professional sense.

TWO RARE CASES OF SUDDEN DEATH.—Dr. Templeman has reported to the Medico-Chirurgical Society, at Edinburgh, two cases in which a post-mortem examination failed to indicate, more than negatively, the cause of death. In the first case a stone mason aged forty-three, of a nervous temperament, rose from his bed in a sudden fit of passion, and in ten minutes fell down dead. No pathological lesion was found, and death was attributed to "emotional inhibition of the heart." In the other case a woman received a severe blow on the epigastrium. She vomited, and died three or four minutes subsequently. No injury could be discovered, but the liver, spleen, and mesentery were markedly congested, and death was attributed to syncope, caused by a dilatation of the abdominal vessels, not instantaneous, but rapidly producing a lowering of the general blood pressure, and consequent anæmia of the nervous system.

ILLUMINATING THE ANTRUM.—Whilst it is not always to be relied upon, the method of transmitting a strong light through this cavity assists in determining the absence of fluid. Instead of introducing the lamp itself into the mouth, Jackson, of Pittsburg, uses a silvered glass rod projecting from a light-tight case, containing a lamp of fifty candle power. The rays are transmitted along the axis of the rod, the ends of which are not silvered and the light is said to issue from the distal end with undiminished intensity. By curving the end of the rod, it can be passed behind the soft palate for examination of the nasal cavities, whilst when resting upon the tongue, with the mouth closed, "brilliant and practical trans-illumination of the antrum is had." We are told that with the distal end upon the thyroid cartilage, light is transmitted to the larynx and that even the abdominal wall was lighted up brightly when a long curved glass tube was passed into the stomach.

Abstracts of British & Foreign Journals.

THE HERBST METHOD OF TREATING PULPS.

By C. F. W. Bödecker, D.D.S., M.D.S., New York.

One of the most difficult and tedious operations the members of our profession are called upon to perform, is the successful treatment of pulp-canals of the teeth, especially those of the first upper bicuspids, the buccal roots of upper molars, and the anterior roots of lower molars.

In many instances the canals in the above-named teeth are so constricted and tortuous that, even with the finest instruments and the greatest skill and perseverance, we are unable to reach the apex of the root. We all know what serious consequences sometimes result from a root which has not been properly filled, especially in people who, from anæmia or from some cachectic condition, are predisposed to necrosis, empyema of the antrum, or cystic formations. In consequence of the great experience, time, and patience which are required to prepare most of the pulp-canals, Dr. Wilhelm Herbst, of Bremen, has tried to simplify this method, and found a procedure which promises to be successful.

Although the author's experience in this direction is but limited, he presents the subject before his fellows as a matter of the greatest importance to all.

He wrote Dr. Herbst to procure some of the teeth which had been in the mouth of the patient at least one year after the operation had been performed, promising him that, if their condition was in accordance with his statements, the result of the investigations would be given before a dental society. The author was very much surprised at the result of his investigations, and consequently began to make some experiments for himself.

The methods of practice observed by Dr. Herbst are as follows: If the pulp of a tooth is in such a condition that it becomes necessary to remove it, an application of cobalt, to which has been added about eight per cent. of hydrochlorate of cocaine, is made to it, and covered with wax or some other temporary filling material. After two or three days, the temporary filling is removed, the cavity cleansed from all decay, and rinsed out with water. Then, if practicable, the rubber-dam is adjusted, the cavity thoroughly disinfected, and the coronal portion of the pulp is amputated by means of a large, perfectly clean, sharp, round bur, which is rapidly revolved in the hand-piece of the dental engine. The bur must be nearly as large as the coronal portion of the pulp which is to be amputated. The pulp-chamber is then to be washed out with a solution of corrosive sublimate of the strength of one-tenth of one per cent., and dried. A cylinder, or a loosely rolled ball of No. 4 tin foil, as large as the cavity will admit, is now placed in the pulp-chamber directly over the amputated pulp-stump, and with a revolving, smooth burnisher, which is smaller than the pulp-chamber, the tin is burnished firmly into it. In burnishing, care should be exercised not to press the tin directly upon the pulp-stump, but the force should be exerted more laterally. It is also necessary that the stumps to be capped in this manner be not irritated with small burs, excavators, or nerve-instruments, as failure has been observed in those cases in which this was done. Dr. Herbst also advises that in case the tooth becomes sensitive to pressure after such an operation, it should be shortened a little, and the filling in the tooth not left high enough to touch the antagonizing tooth. If amalgam is employed, it is advisable to place a small particle of wax upon the tin cap, and distribute it over the surface of the tin by means of the rotating burnisher. If this precaution is neglected, the mercury of the amalgam will combine with the tin, and the efficiency of the cap be destroyed. The theory entertained by Dr. Herbst in regard to this treatment of pulps is, that by burnishing tin or gold into the pulp-cavity, he creates an absolutely air-tight covering to the root-canal, which is not obtainable with other materials. Dr. Herbst claims that good results cannot be expected by the use of amalgam, cement, or gutta-percha, and even tin and gold foils introduced into the pulp-chamber by the mallet system, have proved to be failures. In cases of front teeth, he employs gold foil instead of tin,—as he claims, with equally good results.

In regard to the origin of this method, Herbst writes as follows: "Formerly, when during the process of excavating I exposed a pulp, I capped it with a soft cylinder of gold, burnishing it very carefully over the pulp. It sometimes happened that afterward the tooth decayed in another place, the filling coming out or the tooth being extracted, when in every instance upon opening the pulp-chamber I found it empty, and without the slightest perceptible odour. The colour of these teeth was never changed much, and often there was no perceptible difference between them and the living. These cases led me to assume that the results were dependent upon the air-tight covering of tin or gold which had been burnished over the pulp by the rotation method of filling."

Up to March 25 last, the author had performed fourteen such operations, and describes five of the most typical cases. In all of these, gutta-percha was placed over the tin cap, to be removed again at some future time, and some of these teeth were sixth-year molars, to be extracted later on.

Case 1.—Miss U., about fourteen years of age; good constitution. The left lower first molar was found badly decayed, with acute pulpitis. An application of cobalt was made, which produced very little pain. Two days later, the coronal portion of the pulp was amputated, giving but little distress to the patient. The tin cap was introduced in the manner before described. One day after this the tooth was comfortable, and the patient was able to use it again for mastication.

Case 2.—Mr. B., about forty-five years of age; good constitution. Suffering from pulpitis of the left upper second molar, which had a large cavity in the mesial surface under the gum. Cobalt was applied for two days, during the first twelve hours producing considerable pain. The amputation of the pulp gave little pain, and after the tin cap had been adjusted, the tooth was comfortable, but it remained sensitive to thermal changes for about one week.

Case 3.—Mrs. I., aged about thirty-five years; very nervous organization. The right upper first molar had been afflicted with chronic pulpitis. The pulp, through caries, was exposed over one year, and every attempt to cap and fill it resulted in failure. Then an effort was made to destroy it, first with arsenious acid, and then with cobalt; but neither of these applications could be left in contact with the pulp longer than from thirty to forty minutes, as the pain became too severe for the patient to bear. An application with the methylic spray, which caused excruciating pain, enabled the author to amputate the pulp without much sensation. Upon opening the pulp-chamber, a number of pulp-stones were found, some adherent to the walls of the dentine, others loose n the body of the pulp. The tooth remained sensitive to thermal changes for nearly three months, but after that time it became perfectly comfortable.

Case 4.—Mr. E., eleven years of age; good constitution. The right lower first molar was found largely decayed, and the patient suffering from acute pulpitis. An application of cobalt was made, which gave but little discomfort to the patient. After two days an attempt was made to amputate the pulp, which, however, was found to be too sensitive, necessitating another application of cobalt, which after two days gave satisfactory results, when the pulp was amputated and the tin cap applied. After the adjustment of the tin cap the tooth became comfortable at once, and has given no trouble since.

Case 5.—Mrs. R., about forty-eight years of age; good constitution, though nervously excitable during the last twelve months. A right upper first molar had a cavity in its distal surface, with chronic pulpitis, for nearly one year. Although the pain could not be located in this tooth by the patient, it proved to be the cause of the trouble. An application of cobalt produced violent pain, and had to be removed after one hour. The next day, an application with the methylic spray produced very severe pain, but the amputation of the pulp could then be borne. The pulp-chamber was found to be nearly obliterated, and full of new formations of bone and dentine. The introduction of the tin cap also produced some pain, which lasted several hours. The tooth remained sensitive to thermal changes over two months, which sensitiveness returns whenever the patient does not feel quite well. At other times the tooth is serviceable.

Every one of these fourteen teeth, the pulps of which were treated in the manner described, have been successful, with the exception of Case No. 5, which is due to constitutional disturbances. The author will watch these teeth carefully,and after about one year, open and examine as many of them as possible and report again. In all the cases treated the author has obseved no pericemental disturbances, the teeth having never been sensitive to percussion, except Case No. 5, which at times has shown slight soreness. The cause for a slight pericementitis after the amputation and capping of such pulps is probably that no septic matter has been allowed to enter the pulp-canals before the introduction of the tin cap. Dr. Herbst says that he does not make use of antiseptics in this connection, nor does he always apply the rubber-dam before he amputates the pulp, which may probably account for the slight pericementitis of these teeth as described by him. Every one who tries this method of amputation and capping pulps should therefore exercise the greatest possible care against the entrance of organisms into the pulp-canals which are intended to be capped. Although many pulps are in a septic condition before they come into our hands, yet in the majority of instances sepsis does not extend below the coronal portion of the pulp, and in these latter cases pericementitis can be avoided.

One of the teeth, an inferior molar, which Dr. Herbst sent for examination, was amputated and capped by him in the manner above described about three years ago, and had been in a normal condition until it was extracted. The tooth was removed on account of an overcrowded condition of the dental arch, as well as to obtain a specimen for examination Immediately after extraction it was immersed in dilute alcohol in which it was sent to America. Upon its arrival it was placed in a solution of chromic acid of the strength of one per cent., which solution was renewed every day until the dentine became sufficiently soft to be sliced by the microtome. For staining, an ammoniacal solution of carmine, and for mounting glycerine were employed.

A longitudinal section through the crown and one of the roots of this tooth showed, in the pulp-cavity of the crown, remnants of a narrow zone of previously inflamed, necrotic tissue. The outermost border of this layer is conspicuous because of the presence of black metallic particles, probably the tin foil in combination with sulphur. At the point of bifurcation the pulp is preserved though changed into a fibrous connective tissue by the process of chronic plastic pulpitis.

In this fibrous pulp are small spiculæ of bone-tissue. The boundary zone between the pulp and the dentine shows narrow rows of calcified elongated corpuscles, similar to those often observed along the border between the cementum and pericementum of the neck and the roots of normal teeth. The border of the pulp, towards the pulp-cavity, which had been filled with tin, is likewise marked by metallic particles, which proves that the tin actually has been in contact with the pulp-tissue.

The border of the dentine, both in the crown and the root, is of considerable interest. In the crown the dentine toward the necrotic pulp is thoroughly calcified, without a pronounced structure, evidently in the condition of consolidation and augmented deposition of lime-salts, such as is often observed in dentine bordering metallic fillings. All along the pulp-canal the dentine is broken up into small globular and oblong corpuscles, obviously the result of a previous acute eburnitis, with subsequent deposition of lime-sults. This peculiarly altered zone of dentine is broadest along the pulp chamber of the crown, and gradually tapers along the pulp-canal of the root, while toward the apex it altogether disappears.

The Dental Cosmos.

COMPOUND FRACTURE OF THE INFERIOR MAXILLA TREATED BY WIRE SUTURE.

By T. S. Carter, L.D.S., Eng.

The great advantages over other methods are the perfect rigidity of fractured portions, neatness, cleanliness, absence of a bulky splint and an earlier use of the maxillæ for masticating purposes.

A powerful ferryman, aged nineteen, was admitted into the Leeds General Infirmary on May 11th, suffering from compound fracture of the lower jaw &c. A gutta-percha splint and and a four-tailed bandage were applied, but without effect. The lower maxilla was fractured transversely across the ramus on the patient's left side , also perpendicularly between the two fangs of the first molar on the same side, and likewise perpendicularly through the socket of the second biscuspid on the patient's right. The front portion was much displaced, being deeply depressed, exposing the second fang of the molar in its full length. The front portion was also considerably overlapping the posterior part, carrying the median line of the maxilla considerably over to the patient's left side. Impressions in wax were taken of both maxillæ. On May 20th, the patient was anæsthetised, and with a dental engine and specially made bayonet-shaped drill a hole was made through the jaw between the first and second molars on the patient's left side, an oral spoon on the inner side guarding the drill from piercing the root of the tongue. A stout silver wire was passed through the drilled hole and a second hole between the fang of the canine and the first bicuspid, and the ends were twisted together and tightened with pliers. The chief difficulty in these cases is to return the wire after having passed it through the first drill hole.

The method adopted is as follows:—While drilling the hole get a dresser to hold an oral spoon on the inner side as a guard. Having pushed the wire through into the bowl of the spoon, the latter curls it from the tongue and one can then seize it with a pair of forceps. Then bend a long loop on it and, having passed a fine wire through the second drill hole, attach it to the loop and draw it through. The oral spoon is a great help by safeguarding the tongue, turning the wire and preventing the finger from being lacerated in feeling for the wire—an important factor in cases of a specific character In addition to the suture a Hammond's splint was applied, which fixed the fractured portion on the patient's right, and finally a well-ventilated gutta-percha splint.

On May 26th the parts were in a most satisfactory condition. There was no discharge and the patient was free from pain. On June 2nd the portions wired together were in perfect position, but the back teeth met before the front ones, probably owing to the fracture through the ramus. A broad cotton bandage (double thickness) was applied, the frontal portion being tightened in order to raise the body of the jaw. On the 11th the teeth were well opposed to each other. The patient was free from pain, and all looked healthy. He was made an out-patient. On July 7th the bandage and Hammond's splint and wire suture were removed. All was found firm and in good position. In another case the inferior maxilla was divided in the median line to facilitate the removal of cancer from the floor of the mouth. There was difficulty in obtaining union in the ordinary way, but the application of a strong wire suture, applied as described, answered most efficiently, and there was rapid union.

The Lancet.

DEATH UNDER CHLOROFORM.

Mr. F. Mortimer Rowland, M.B., Resident Medical Officer at the City Infirmary, Birmingham, reports a case of death under chloroform in that institution: M. S., aged 57, was admitted on November 9th, under Dr. Carter, suffering from ascites, which was thought to be complicated by a tumour (?cystic) in the right pelvic region, for which it was decided to operate. For this purpose, she was transferred to Mr. Jordan Lloyd; and on November 12th, the heart having been found to be apparently healthy, chloroform was administered on a piece of folded lint. Chloroform was given in preference to ether because of an asserted liability to pulmonary trouble. The patient took the anæsthetic perfectly well, and was in no way excited, respiration continuing evenly and deeply, and at normal rapidity up to the time when the skin incision had been made, when quite suddenly, and without warning, she became livid, made a few shallow gasps, and breathing ceased. The heart was examined instantly, and no sounds could be detected. The pupils were not dilated, being about a line in diameter. The tongue was well forward between the teeth during the administration. The head was lowered over the end of the table, and artificial respiration, both by Sylvester's and Howard's methods commenced, but no air could be made to enter or leave the chest. Insufflation of the lungs was tried without effect, tracheotomy was then performed and insufflation again attempted, though again without effect. Heart puncture made within a few minutes of the onset of alarming symptoms showed the cardiac muscle to be absolutely inactive. Chloroform from the same bottle had been administered the day previously, and was given to another case immediately afterwards without any disturbing effect. The amount administered in this case was not measured accurately, but could not have exceeded half an ounce, and the patient was completely, but not deeply, under when alarming symptoms arose. It is thought that respiration and circulation ceased simultaneously, but that the symptoms were due to respiratory cessation, aided by the upward displacement of the diaphragm from the abdominal fluid. At the *post-mortem* examination the cardiac condition was not such as could be recognized by auscultation, there being no valvular lesions, nor was the condition of the muscle such as could have affected the duration and tone of the first sound. Dr. Rowland calls particular attention to the following: (1) The normal size of the pupils: (2) the position of the tongue; (3) the sudden development of the condition; (4) the lividity of the face throughout in the entire absence of obvious signs of laboured breathing; (5) the early arrest of the heart's action as discovered by auscultation and puncture; (6) the complete failure from the first to make air either enter or leave the chest by any artifical means.

British Medical Journal.

METHOD OF FIXING PATIENTS FOR OPERATIONS UNDER ANÆSTHESIA IN THE SITTING POSTURE.

By Dundas Grant, M.A., M.D., F.R.C.S. Eng.

For many of the shorter operations on the mouth, throat, nose and ear it is very desirable to have the patient in the position in relation to light, attitude &c., in which examinations are habitually made. At the same time the sitting posture has many inconveniences for the adminstration of anæsthetics, and chloroform is practially inadmissiable. Several years ago, at the Central London Throat and Ear Hospital, the possibility of removal of tonsils or adenoids, or even both, during the administration of nitrous oxide was shown, a practice which in that institution has now become a matter of daily routine.

Hitherto one great difficulty has been the tendency of the patient to slip off the chair at the moment when the anæsthesia becomes complete, and to have recovered consciousness by the time he is "collected" and propped up again. To prevent this accident the following simple method of fixation is recommended. A short jack-towel with the seam unstitched is placed round the back of the patient's neck like a priest's stole, with the ends hanging down in front. Each of these ends has firmly attached to it about two feet of soft, thick cord or thin rope. He is then seated on a chair which has a very narrow, high back, on the posterior surface of which, and at about the height of the patient's head, there is a stout upright hook. The middle of the jack-towel is raised off the patient's neck, lifted over the back of the chair and laid on the hook. The two ends are then brought backwards under the armpits and round the back of the chair. The ropes are then crossed over the hook and tied in a bow. The patient is thus simply, securely and "unalarmingly" fixed so that he cannot slip down. A band may be placed round the forehead to keep the head fixed, but this is most effectively and pleasantly done by the hands of some one standing behind. At the same time the patient can be instantly released by the simple pulling of the ends of the ropes forming the bow.

The Lancet.

MUTILATION OF THE TEETH AMONGST SAVAGES.

Dr. Magitot of Paris has published an interesting account of the multilation of the teeth practised by various savage tribes. One variety; which is chiefly met with on the coasts of Africa and the west coast of New Guinea, consists of the breaking of a portion of the incisor by means of a knife and a piece of wood, and is performed between the ages of twenty and twenty-five. The custom of extracting the two central incisors is found in both hemispheres. According to Zerate it has been practised in Peru from time immemorial, where it is inflicted on conquered tribes as a sign of slavery. In Africa it has been observed on the Congo amongst the Hottentots and theBatoxas. The mutilation by filing has for its exclusive centre the Malayan Archipelago, whence it has spread to the adjoining islands. It is a religious act, which is celebrated with great festivities at the age of puberty, but this only by the Mohammedans. The degree and character of this filing vary with the habits of the family or caste. The operation is performed by an expert, the *Tukang Pangur* (filer), by means of a chisel, three bricks, two files, a small saw and a pair of cutting nippers, the instuments being rubbed with arsenic and lemon-juice before being used. It is the fashion amongst some tribes on the Senegal River to extract the upper temporary incisors in girls when quite young and to manipulate the chin, so that it is drawn forward and the lower incisors are made to protrude so as to overlap the upper lip, thus producing an artificial prognathism. In Indo-China and Japan a girl on her marriage paints her teeth with a black varnish. However, as this operation requires time and money, it is only practised by the wealthy class. Livingstone reported that among the Kafirs a child whose upper teeth erupted before the lower ones was regarded as a monster and killed. On the Upper Nile the negroes have their upper incisors extracted, in order to avoid being sold as slaves, because of the loss of value brought by this mutilation. Among the Esquimaux, as described by the Abbé Peritat, in some regions there exists a custom of transversely cutting off the upper incisors, the object of this being, according to local tradition, to prevent the human chin looking like that of a dog.

The Lancet.

"TO BE CALLED DOCTOR AND TO BE RESPECTED."

Our attention is called to the fact that in Germany dentists from America holding the diploma of D.D.S. or D.M.D. have been fined by the Courts for using the title of Doctor. There are in this country many dentists from America who have in two years managed to get a qualification for manual dexterity granted by those who have taught them, and whose preliminary education is far from being adequate to sustain the title of Doctor of any science. There are, a correspondent suggests, two medical defence societies now, and one or both of these might with advantage make a raid upon a few of the gentlemen above referred to. This, it is stated, may be the more necessary in that it is alleged that some Englishmen are found who avoid the four years' curriculum required for the dental licence in this country by going to America and becoming naturalised citizens, in order that they may obtain a diploma in two years which entitles them "to be called Doctor," and enables them to claim to be registered under the clause in the Dentists' Act relating to foreign dentists. The General Medical Council will, it is suggested, be justified in refusing such applications on the grounds that it is contrary to the spirit and intention of the Dentists' Act, and the question can then be considered by the Privy Council.

British Medical Journal.

MATRICES.

By G. J. Dennis, M.D., D.D.S., Chicago.

The chief advantages possessed by matrices, are their economy of time, labour, and of the suffering of the patient, together with the possibility of performing operations which would be precluded without their aid.

It is claimed that although matrices do possess these qualities, their disadvantages are so great that few operations performed with them are successful. The reasons stated are that the borders, especially cervical borders, are not thoroughly filled, owing to the impossibility of filling angles well, that if gold is used as the filling material, it cannot be placed securely in the cavity, or condensed perfectly against the tooth wall, because of the yielding of the walls of the matrix ; that there is too great a danger of fracture of the enamel margins and that a proper contour of the tooth, necessary to the preservation of the interdental space cannot be produced.

That there is a certain truth in these statements against the use of matrices, cannot be doubted. They cannot, however, with justice, be said to be the fault of the matrices, but rather must be attributed to careless manipulation on the part of the operator. The reason for so much discussion in regard to their usefulness, from the standpoint of the writer, lies in their proper or improper application to each individual case. In the application of any instrument, good judgment is necessary, and the conditions as they present themselves must be studied. This is especially true of the application of matrices ; for instance, the width of the space between the approximating teeth where the cavity is situated, the extent of the cavity toward the neck of the tooth, the lateral extent of the cavity, whether the lateral margins are closely together or some distance apart, the shape of the tooth, whether bell crowned or not, the space on the opposite side of the tooth operated on, the occlusion, and the loss of one or more teeth in the immediate vicinity, as well as other conditions present in each case—all those must be considered.

To be properly used, matrices should be made of some tough flexible and elastic material, and as thin as possible, and when placed in position they should conform themselves approximately to the shape of the teeth as they existed originally.

On the other hand, if matrices are made of an inflexible, unyielding metal and unpolished ; if they are held tightly in position with their surfaces, in close contact with the borders of the cavity, or so loosely that they slip and slide from their original position ; if the enamel margins are either extensively bevelled, or thin edges of enamel are permitted to remain ; if no consideration of tooth form has entered into the shaping of matrices ; or if the filling material is not well impacted against the tooth and against the walls of matrices; if the sides of the filling have not been carried up a little higher than the centre as the operation has progressed, then failure in the use of matrices will be the inevitable result, and these instruments will be condemned when it has been the operator who has been at fault.

These instruments must be used carefully and skilfully, and each case must be studied with regard to the conditions present. If this is done, matrices will receive the approval of all dentists, and the results will justify their more extensive application.

The Dental Review.

THE TEETH OF RUSSIAN SCHOOL CHILDREN.

By Dr. B. LAUFER.

The question of physical education of children and the preservation of health of school children has been warmly discussed lately on the pages of our periodicals. Society always listens eagerly to everything which competent persons have to say on this subject, because the health of children naturally interests greatly the parents. Unfortunately, up till now, all these talks have had very few practical results, and the health of children in general, and school children in particular, depends, as of yore, on good fortune.

The hygienic demands are materialising in the schools extremely slowly. Even the system of medical assistance is very unsatisfactory, though every gymnasium has a physician. Dentists only assist in cases of acute attacks, and even then it is limited to some prescription calculated to temporarily stop or obtund pain? but they cannot pay attention to the general condition of the teeth, which would include such measures as filling, cleaning, etc. Whereas it is apparent to everyone, even a non-specialist, how important is is for man, and especially for children, to have the teeth in a satisfactory condition, as the general state of the body in a large measure depends on this.

The foregoing considerations can be confirmed by the results of the investigation in this direction made by me in accordance with a request from the directors of the Minsk Gymnasia during January, 1892.

I have examined five hundred and eighty-five scholars, of which number four hundred and thirty required dental assistance. During this examination I found, among others, caries, periostitis, ostitis, interesting cases of stomatitis, delayed and irregular eruptions of the permanent teeth in consequence of the neglect of the deciduous tartar, there being cases where a whole row of teeth was covered with it so that the individual teeth could not be discerned.

Of course, only an insignificant portion of those requiring dental help apply to the dentist, and these only in cases of acute diseases. The majority do not pay any attention to the constant injury of the teeth, partly because of traditional indifference to this subject, and partly on account of lack of means.

Items of Interest.

PROPHYLACTIC FOR TONSILLITIS.

The following is recommended for use by those persons predisposed to the development of tonsillitis:

R. Alei Menth. Pip. ... Mviij
Acid. Carbolic (crystal.) ʒj
Spt. Vini. Rectificat. ... ʒij

M. Ten drops to be added to a cup of warm water, and this solution used as a gargle night and morning.

The Clinical Journal.

A **Solder for Aluminum.**—The soldering of two pieces of aluminum has heretofore been considered impracticable, but recent experiments show that it can be easily done by the use of chloride of silver as a fuse. The pieces of metal are placed together, and a finely-powdered fused silver chloride is spread over the juncture. The solder is then melted by a blow-pipe.

Rural Collaborator.

Dental News.

NATIONAL DENTAL HOSPITAL.

A Cinderella Dance was given by the Students of the National Dental College, on Monday, December 19th inst. at the Portman Rooms, Baker Street, W., instead of the usual Smoking Concert, it being felt that the more sociable and enlivening gathering would come as an agreeable change The new departure was supported most heartily by the members of the Staff, and the Students of the National Dental Hospital, together with their friends, including a brilliant assemblage of the fair sex. The entire programme went off without a hitch of any kind and hopes that there would soon be a repetition, were expressed on all sides.

APPOINTMENT.

Mr. J. C. Lingford, L.D.S. 'Eng., appointed House Dental Surgeon to the Victoria Dental Hospital of Manchester.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

To the Editor of the "British Journal of Dental Science."

Sir,—The letters that appeared in your last issue, anent the new resolution of the Medical Council are in themselves sufficient evidence of the necessity for the action taken by that Authority.

The unsophisticated (?) epistles of 'Hard Lines' and 'Enquirer' need no comment, they speak for themselves.

I cannot, however, refrain from expressing my surprise that a practioner of Mr. J. L. Robertson's qualifications and standing should adopt the attitude that he has assumed in the matter. The fact that "any medical man let him be ever so ignorant of dental matters, as most of them are, can practise as a dentist" is no doubt a glaring evil and one that should be remedied without loss of time, but I fail to see that it constitutes a reason for decrying an effort that is being made to do away with 'dentists' who have not qualification at all, not even a guarantee of their respectability.

In Mr. Robertson's case it may perhaps seem hard that the employment of unregistered men is forbidden, because regard for his own reputation would be the best guarantee of the competency of his assistants. Nevertheless, he must remember that there are many men on the dental register who rely for their practices rather upon the attractiveness of their advertisements than upon the unimpeachability of their reputation, and it is against such that the resolution in question is directed. Moreover, it does not follow that because the Medical Council has the power of preventing the employment of unqualified assistants that it will exercise it tyrannously or injudiciously.

Whatever Mr. Robertson may feel with regard to our professiona relations with the Medical Council, I am sure that he will, upon reflection, come to the conclusion that, under existing circumstances, that body has in this instance acted for the best.

I am, Sir,
Your obedient servant,
T. E. CONSTANT.

South Cliff, Scarborough.
December 21st, 1892.

"WARNING."

To the Editor of the "British Journal of Dental Science."

SIR.—Having perused your Report of the proceedings of the General Medical Council in your issue for this month, your article (page 1121) and Mr. J. L. Robertson's letter (page 1137) it will be a favour that the following be considered worthy of publication.

The General Council appear to have been actuated in this matter by the statement of the British Dental Association concerning "covering" in the "practice of Dentists" (page 1128 &c.) which statement was to the Council's Solicitor who reported that fourteen cases of covering had been referred to, which if proved against a Medical Practitioner would justify the removal of his name from the register. As a Dentist, I maintain that when the Dental profession was to be, as it is, stigmatized by that statement and on which the solicitor bases his report, it ought to have been circulated along with the warning, more especially as the word "covering," is unintelligible in the practice of Dentists in Scotland. The solicitor may probably be aware of the meaning of that word, because he refers to the fourteen cases, and the General Medical Council take it for granted that he is correct, while he only says, if proved against a Medical practitioner would involve the removal of his name from the Register. No doubt to a certain extent the meaning of "covering" may be presumed, because the Executive Committee's resolution (page 113) was that the Solicitor should prepare a draft warning to registered dentists against the unqualified assistants, analogous to that given to registered Medical practitioners on April 21, 1883. A perusal of the warning is only necessary to convince any one that it must embrace much more than the "covering." It does not seem unreasonable to conclude that the Council Executive and Mr. Farrar have thought that on account of some disgraceful conduct, "covering," on the part of Medical practitioners in England, that that term would consequently be known to Dentists in Scotland. Mr. Farrar no doubt reports and advises, but he has presumed too much and the Council have followed his example. There is no statutory authority for the threatened action, because the Council can only administer, neither they nor any other corporate body having power to add t or detract from statute.

The present action is arrogant, not only in respect of assumption of powers by the Council as stated, but in an attempt to dictate in reference to the Dental profession, matter about which its members are ignorant in many respects, including Dental Mechanics, which every apprentice requires to be taught. The warning prohibits this, and it cannot be supposed that the members of the General Medical Council desire being considered unworthy of sincerity. Sir Richard Quain, Bart. when Mr. Quain, stated that mechanical knowledge on the part of a dentist, was an all-important department of his profession, and while he thus spoke, he then, as now, proclaimed a fact, but without fear of contradiction, the assertion can be made, that few, if any, of the Medical profession have any knowledge of that branch. It is therefore necessary in the protection of the Dental profession, that a Dental Council should be constituted for England and Scotland and Ireland, respectively by statute, with the same, but independent powers within their respective jurisdictions, not unsimilar to the powers conferred on the General Medical Council, and repealing all doctor's rights and powers presently in force under all Medical or other acts. To carry out this object, I may predict that the dentists in Scotland will co-operate with those in England and Ireland in endeavouring to obtain such an Act, and on hearing from dentists in either of these places, or through you desirous of procuring this authority, action will be adopted at once to bring the proposal before the Scottish dentists. It cannot be expected that the Medical Council could fail to welcome this step, were it only on the ground stated by Sir William Turner, "that the dental fund was already in debt to the Council."

Under what authority has the British Dental Association been constituted? Where is its office? and who those gentlemen composing the management? It is unknown in Scotland.

I remain,
Yours truly,
THOS. F. TRACEY, M.A., Ph.D.

3, West Campbell Street, Glasgow.
December, 1892.

THE MEDICAL COUNCIL'S WARNING.

To the Editor of the "British Journal of Dental Science."

Sir,—The resolution passed by the above Council, on November 24th, 1892, charging every registered Dentist who shall employ an unregistered assistant, with disgraceful and infamous conduct, and threatening to remove names from the Register, is certainly a high-handed and unjust proceeding, seeing that the Medical Council have taken for Registration fees alone nearly £10,000.

Is this the best return that they can make to the simply registered Dentist? If so, I quite agree with your able correspondent, Mr. Robertson, that if we are to be dictated to by an Association of Gentlemen who have practically formed themselves into a Trades' union, and who at the same time are in the "Great Minority," it is high time for dentists to agitate for a separate charter for themselves, for I respectfully submit that no other community of nearly 5000 strong in any other profession or business would allow such a state of affairs to exist.

As we have nothing to expect from the Medical Council, which by the way has no dentist's representative upon it, an effort must be made to establish ourselves independently, as in America. There, Dentistry is Dentistry, pure and simple, governed by *dentists alone* and not tacked on to another profession, which neither understands our requirements nor respects our position.

Faithfully yours,

JOSEPH S. HARRISON.

Rotherham, December 22nd, 1892.

ANSWER TO CORRESPONDENT.

Dent.—Anonymous correspondence cannot be taken into consideration. Name and address must always be given, though not necessarily for publication.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
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No. 600. LONDON, JAN. 16, 1893. Vol. XXXVI.

ON INFLAMMATION IN BONE.*

By Dr. German Sims Woodhead, F.R.C.P.Ed., F.R.S.E.

With our present knowledge of the intimate structure of bone, and of the processes involved in inflammation of that tissue, it is scarcely necessary to point out that here, as in all other tissues, the main processes have a uniform type ; the reaction of the cellular elements are the same ; the changes in the walls of the blood vessels are identical, and lead to secondary changes of much the same kind as those met with in other tissues. The fact, however, must not be lost sight of that in bone the proportion of dead or devitalised material to active living cellular tissue is much greater than elsewhere, and that, therefore, the effects of inflammation are more evident to superficial examination—both clinically and pathologically—than when any other organ or part is affected. Moreover, in consequence of the large quantity of dead matter formed by the cells in health, there are much greater possibilities in the way of modification of structure under different inflammatory conditions than when any other part or tissue of the body is affected. The bone derives its nutrition from two sets of vessels—(1) the large nutrient arteries, which, passing through small canals with hard and undistensible walls, supply

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* A Paper read to the Odontological Society of Great Britain.

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the bone marrow and the layers of bone near the central or medullary canal; (2) the vessels breaking up into a network in the deeper layers of the periosteum, which afford a rich supply to the outer layers.

It is evident that we have areas of inflammation presided over by these two vascular supplies, perfectly independent of one another, and according as one or other area is affected—and how—we have clinical and pathological manifestations which can only be brought into line, and be looked upon as the result of the same processes of inflammation by a thorough study of the essential changes involved.

In order that we may approach the subject from the point of view that the main phenomena in inflammation are the result of the reaction of the tissue cells to an abnormal stimulus, I will very briefly point out what an important part the cell plays in the process of bone formation. Taking first the bone of an epiphysis, just at the margin of the intermediary cartilage, and examining the homogeneous trabeculæ, we find that on them lie a number of small nucleated cells—the osteoblasts or bone-forming corpuscles. In the spaces between the trabeculæ are delicate blood-vessels, the walls of which are also formed of, and surrounded by, small nucleated cells. In very early stages of bone-formation these cellular elements preponderate very largely, but as development advances they appear to form a delicate substance which ultimately takes the form of a homogeneous matrix; then the cartilage disappears, giving way to a more fibrous matrix, which must be looked upon as forming the temporary scaffolding of the bony trabeculæ. The cells always remain, but the cartilage may be formed into or replaced by the more permanent bony trabeculæ. In addition to these small cells, both in cartilage and in bone, there are large multinucleated cells, which appear to have a special function in connection with the absorption of bone even under normal conditions—cells which are very similar to the plasmodia or large absorbing cells met with, especially in certain chronic forms of inflammation.

The periosteum, as we have seen, forms a vascular fibro-cellular sheath around the bone, and plays a most important part in determining the nutrition of the bone. The dense fibrous outer layer serves rather as a protecting sheath to the more vascular layer beneath, the osteogenetic layer; this latter is composed of nucleated cells arranged in a fibrous matrix richly supplied with blood-vessels. The cells, like those at the end of the bone, are somewhat modified both as regards shape and arrangement as they come near the bone, for whilst those near the surface are rounded and comparatively small, those nearer the bone are much larger and, often, spindle shaped. It is sometimes difficult to make out any sharp line of demarcation between the fibrillated matrix and the bone substance. Under normal conditions, then, whilst the small round cells in the situations above mentioned probably play a part in forming the matrix substance, the larger multinucleated cells appear to be more intimately associated with the destruction of the bone. We find, however, that in inflammation of bone where the small cells are more numerous, apparently as the result of rapid emigration of leucocytes or actual proliferation of these fixed cells, instead of laying down a matrix, they acquire a distinct power of absorbing the bone trabeculæ; however, of that more immediately.

For long it was held, especially by the German school of pathologists, that inflammation was associated almost entirely with the changes that occur in the walls of the blood-vessels, but the French school, who made a special study of the changes that take place in inflamed serous membranes, confined their attention almost exclusively to the epithelial and connective tissue changes that are so marked in that position. When, however, we come to look at inflammation in its broadest aspect, and examine the processes as observed in the kidney, the liver, or in bone or cartilage, it is borne in on us that it is not associated with any single set of tissues, for we know that the walls of the blood-vessels, the lymphatic and connective tissue systems that surround the vessels, the cells lining large serous sacs, the parenchymatous cells of the various organs, the cells lining the alveoli or the bronchial tubes of the lung, the various layers of the periosteum, and the tissues within the bone, may any or all of them be involved ; in fact, although one set of tissues in any organ may be affected more than another, we never find any manifestation of reaction in the one without obtaining certain evidence of a corresponding reaction in the others.

We now know that inflammatory changes may occur as the result of some noxious stimulus in a tissue entirely devoid of ordinary blood-vessels, just as certainly as it may occur in tissues in which we can find no epithelial cells, but we also know that if either of these structures be present in an organ or part subject to irritation, it will as a matter of course take part in the general imflammatory process. In no tissue does this hold good more completely than in bone, in which, however, in acute inflammation as the result of injury, followed by the invasion of a pus-forming organism, the changes take place so rapidly that in most cases it is almost impossible to follow their evolution. Where a less acute inflammation is brought about by irritants that act rather more slowly, it is often possible to make out that the large endothelial cells forming the walls of the vessels undergo marked change ; they swell up somewhat irregularly, their protoplasm, at first granular, ultimately becomes more hyaline in appearance than normal, and we have evidence of their division. Similar changes take place in the large endothelial cells lying in the perivascular spaces immediately around, and the other fixed connective tissue cells follow suit; moreover it may be observed that the branched cells lying in the lacunæ take on a similar granular and then hyaline appearance; at the same time there appears to be an escape, not only of fluid—which is rapidly absorbed by the altered cells and fibrous filaments, both of which may become enormously swollen—but of a considerable number of leucocytes which pass directly from the bloodvessels into the surrounding lymph spaces. These changes can as a rule only be observed at the point of junction between bone and cartilage, where, as the calcification is more or less incomplete, it is possible to carry the knife through a few spicules of bone near the margin of the cartilage, and then only in specimens in which the fixing process has been brought about very rapidly. In the leucocytes and in the proliferated fixed cells—which not only become very like ordinary embryonic cells or leucocytes in form, but also appear to revert, as regards their function, to the more primitive form of cell—we have evidence, both that they are more motile and more plastic, and that consequently they can make their way through comparatively small channels and spaces, whilst their voracity or power of ingesting foreign or dead particles is increased to an enormous extent. Unlike the normal osteoblasts, which they appear most to resemble, they may often be seen attacking, as it were, the formed fibrous, cartilaginous or bony matrix, and some observers have actually described the presence of minute, highly refractile, probably calcareous granules, in the substance of these cells.

Many authors ascribe the dilatation of bone spaces into large cavities to the mere mechanical distension caused by the accumulation of pus, but from what we know of the structure of bone it can scarcely be conceived that such dilatation, especially in the early stages of pus formation, is possible, unless the migratory and fixed connective cells, of which we have already spoken, have the power of gradually absorbing the trabeculæ. That there is increased tension in the cavity within the bone is well known—in fact, just as in abscesses in the soft parts the tension is often extremely great. There are many people who still believe that this tension within the abscess cavity is due entirely to the altered vascular conditions maintained there ; but how, may we ask, could any possible vascular changes increase the tension, and to what extent?

Allowing that the blood pressure in the capillaries under normal conditions is equal to a manometric pressure of two inches of water, one can understand that if there were extreme dilatation and weakening of the walls this pressure might be increased some twice or thrice, but such a pressure as this would be quite insufficient to raise the pressure to that obtained within an ordinary abscess, as anyone who has plunged a Syme's knife into a large abscess will have observed. Another purely physical factor, osmosis or dialysis, must be taken into consideration, and it has been suggested that the wall of an abscess practically plays the part of a dialysing membrane, and that in consequence of the difference in composition between the dead fluids within the membrane and the living ones outside we have a process of osmosis as a result of which the pressure within the abscess is at first raised, and afterwards, if the abscess be not opened, diminished. Here again the purely physical explanation is obviously not to be relied on, so that we are ultimately thrown back on one in which the chemico-physical and the "vital" factors are combined.

We know what happens in such a condition, say, as ulcerative endocarditis, when a septic embolism becomes lodged in a vessel. If the increase of fluids and leucocytes were due to the increased pressure—the *vis a tergo*—we should find them around the vessel on one side of the embolus in much greater quantities than on the other, because on the side nearest the vein the pressure should be considerably lower than it is on the side near the artery, that is, if the altered tension were caused solely by the impaction of the embolus; instead of that, however, we find that the leucocytes are distributed comparatively equally all round the thrombus. Then, too, it is evident that the increase in the number of leucocytes in this position cannot be due merely to the diapedesis as a result of increased pressure within the vessels, nor at this stage would any mere difference in the specific gravity of the fluids of the part lead to such an equal drawing in of leucocytes into a well circumscribed and limited area, the tissues and spaces of which can still be made out fairly distinctly between the crowding in leucocytes; for we have an enormous accumulation of leucocytes in the site of what must ultimately become an abscess, although the tissues of which it is composed have not as yet become completely softened.

It is at this point that we have offered to us the explanation of chemotaxis. This chemotaxis, of which so much has recently been written, must be looked upon as the result of an effort made on the part, not only of the leucocytes, but also of the rapidly proliferating fixed connective tissue cells to get rid of invading micro-organisms and their products. Whatever other factors may be pressed into service to help in the destruction of micro-organisms, these wandering cells, stimulated by a dilute poison, become more motile and assume a greater power of taking in foreign particles, although ultimately, as we shall see, they may become over-worked and may undergo rapid degenerative changes. Around any centre of pyogenic micro-organisms we find that there is a process which can only be compared to that brought about when enzymes act on albuminoid substances; we have both highly organised cells and connective tissues of various types undergoing regular digestion. The degenerating or digested materials, or chemical irritants, so formed, along with the enzymes themselves, act as foreign bodies; and it will be found that around and gradually invading the degenerated mass, are numerous small nucleated cells, most of which appear to have come from the blood-vessels, though, as one would expect, a certain number have arrived specially by the lymphatics; along with these are seen a number of larger cells which apparently can only have their origin in the fixed connective tissues cells—those endothelial cells lining the lymph spaces around the vessels. There appears to be, in fact, a definite attraction for these cells by the products of these micro-organisms acting on the proteids of the tissues—a *vis a fronte*—and we cannot but feel, on examining this process most carefully, that the increased tension must in great measure be due to this chemotactic action. Although in the centre of every abscess—the result of a specific inflammation—there is well marked degeneration of the tissues, there is always around this a cellular zone, similar to that we have mentioned, the cells of which appear to have an extraordinary power of devouring all dead or partially devitalised material, and even of taking up such organisms as have exhausted themselves in their attacks on the dead tissues, these devouring cells appearing to have little or no power of discrimination, for we find that just as in the case of formed connective tissues—or as Redfern pointed out, in the case of cartilage—so in bone we have these active cells rapidly disintegrating the formed bony matrix, first appearing to remove the lime salts, and then making short work of the matrix itself, and anyone who watches the absorption of bone carefully, will be able to make out the irregularly eroded outline against which the cells are directing their attacks, with a clear band immediately in contact with the cells, and beyond this the opaque tissue in which the calcareous salts still remain.

In a commencing abscess in a long bone in a case of osteomyelitis, one is able to see how perfectly are reproduced all those appearances that have been so frequently described in ordinary abscesses, and it is at once seen that acute inflammation in bone is essentially the same process and is attended with similar results as is acute inflammation in the soft tissues. The naked eye appearances and the clinical results are different, and often are much more serious than when certain of the soft parts are affected, but this is due rather to the inability of the surgeon to reach the mischief without opening up channels through which the infection may be rapidly spread to other parts of the body than to any essential difference in the process itself. If we bear in mind the intimate relation of the periosteum to the nutrition of the outer shell of bone, we can readily understand how any disturbance of the vascular arrangement in the periosteum brought about by inflammatory changes, can interfere most seriously with the nutrition of bone, and that if the effusion of fluid and the accumulation of wandering leucocytes between the periosteum and the bone be large in quantity and extending over a considerable surface, how readily the bone may ultimately be cut off from its source of nutrition; the organised cells in the lacunæ and Haversian canals dying off and a mere shell of dead bone remaining.

The large spaces which are found in bone in acute inflammation, in which suppuration has not taken place or has not continued, only afford one of the forms of evidence of inflammation, but they always point to the fact that the inflammation has been comparatively acute, except in old people, when they point to a simple excess of the process of absorption over that of bone formation. Most of us, however, in our pathological studies have come across bones in which in place of a diminution in the quantity of calcified matrix, there has been apparently a filling up of the normal spaces and the production of a hard dense bone, to which the term osteosclerosis as opposed to osteo-porosis has been applied.

In connection with this, let me for a moment draw your attention to the peculiar solid wedge-shaped infarcts found near the ends of tuberculous bones: König, Alexis Thomson, and Watson Cheyne have all studied these indurated patches, and as they are perfectly definitely localised, they may here be studied more carefully than in other conditions where there is a general solidification of the bone. They occur most frequently at the ends of long bones near the junction of the epiphyses or immediately under the articular cartilage. König, who probably was the first to study them systematically, describes them as due to infarction, their wedge shape being due to the cutting off of the arterial blood supply to the small wedge-shaped area, just as in the case of an infarction of the spleen. Thompson and others have raised objections to this explanation, holding that such masses are far more likely to be tubercular sequestra. As I have elsewhere pointed out, both processes probably enter into the causation of these pale hard masses. Klein, Watson Cheyne, and others, as a result of experiments have found that owing to the tuberculous changes in and around the vessels in the bone, there may actually be formed an infarcted area, but that in some cases there is no evidence of any primary tubercular process beyond the infarction itself; a probable explanation—whether these be due to localised tuberculosis or not, though it can best be explained on the tuberculosis theory—is that the ostooblasts and other cells first proliferate as the result of slight irritation, and then, in consequence of further stimulation die *in situ*; they then, as in other positions, become swollen and hyaline and rapidly become infiltrated by lime salts. The infarcted bone assumes a much denser appearance than the normal bone surrounding it. The tendency to calcification in degenerated areas, which is so marked wherever there is slow degeneration in any tissue, is still more marked when such degeneration is going on in the cells in the bone canals. This explanation is somewhat different from that offered by Metschnikoff, although his observations, I believe, confirm in a most remarkable manner what I have stated. In the tissues of the Gerbilla, a small Algerian rodent, there is a distinct resistance to the action of the tubercle bacillus, a resistance with which a very beautiful process of calcification is said to have a casual relationship, but which I think is rather the result of a certain resistance.

Metschnikoff, who on this point disagrees with Weigert and Koch, holds that in such a giant cell we have no degeneration, but I believe, from what I have seen in tubercle of the horse and the cow, in which calcification occurs at a very early period, that we must look on the calcification itself as evidence of degeneration. We can scarcely imagine that the tubercle bacillus can go on forming a fresh membrane within the old membranes, and distending these latter after they have become calcified, but one can readily understand how the tubercle bacillus, acting on the protoplasm of the cells in its immediate neighbourhood, deprives it of its vitality and converts it into what, to all intents and purposes is a dead membrane through which, however, dialysis may take place, and in which the lime salts may be readily deposited ; these membranes one would say are far more probably formed outside the old layers as successive dead layers are produced, each one offering a temporary protection for the living protoplasm against the action of the bacillus. As these layers become increased in number, the bacillus cut off from its food supply, a free exchange of nutrient material and effete products no longer being carried on by dialysis, the organism dies, the process of membrane, dead tissue, or degenerated tissue formation stops, and calcification becomes complete. Wherever this has taken place, as Metschnikoff has pointed out, it is impossible to make out by any staining reactions at our command, any trace of living bacillary protoplasm in the centre. We have in this a very beautiful explanation of certain of the facts con nected with tubercular inflammation in bone; first of all of the extraordinary density of the infarcted tuberculous areas, the "keil sequestra" of König, and also of the remarkable absence from these tuberculous foci of any tubercle bacilli that can be stained. We do not find the regular layers as described in the Gerbilla, because in these dense tubercular areas the tubercle bacillus in the first instance cannot diffuse its poison so equally, although in all probability it is enabled to do it much more rapidly; the results, however, are the same. A number of bacilli making their way into the spaces of a certain area are attacked by leucocytes and proliferating connective tissue cells, which we have seen soon become hyaline and swollen, and ultimately die; the bacilli confined along with the cells in the bone spaces may live for a time, there is always a slow dialysis going on to and from them, even through dead cells, and we have a deposition of lime salts, at first most markedly in the immediate neighbourhood of the bacilli, but ultimately in all the degenerating cells. As long as any channel by which fluid can arrive is left, the bacilli, although slowly degenerating, do not die, and we know where this slow death takes place the bacilli will no longer take up the characteristic stains, so that when we come to examine this dense bony mass no bacilli can be made out. It is often found that at the margin of the sequestrum a more acute process of inflammation has taken place, in which the process of proliferation and degeneration of the cells are so well adjusted that the phagocytes are enabled to open out very considerable spaces, in consequence of which the dense sequestrum may lie perfectly loose near the end of the long bone. The process of osteo-sclerosis—a somewhat clumsy term, but one which indicates the kind of process which takes place in very chronic forms of syphilis and in certain other diseases—may also be explained on this irritative inflammatory and degenerative theory, and it is one which I think is well worth further study.

In examining this process of calcification in chronic inflammation we must always bear in mind that we have a mass of active cellular elements with which the blood and lymph are constantly coming in contact; the fluids are the carriers from which the cells obtain their nutrient material; they are the vehicles by which effete matter is removed, and as a matter of fact it has been found that in the neighbourhood of all active cells these fluids differ very markedly in their composition from the general fluids. For example, there is always an increase in the amount of free carbonic acid in the fluid near these cells, and we have a formation of phosphate and carbonate of lime, the latter in comparatively small amount. In the neighbourhood of dead membranes, if these salts are removed at once by dialysis, they remain stable and may be deposited at once, but if they are allowed to remain in contact with the phosphoric acid of the blood and the alkaline phosphates, they are re-dissolved, and are returned to the general fluid circulation. As Irvine and I pointed out elsewhere,* this primarily bears on the process of calcification of bone. The osteoblasts lay down a matrix of formed material; the more active the cells within certain limits, the greater the relative amount of matrix. This matrix may be looked upon as inert or dead organic matter, which "corresponds to a membrane through which dialysis may take place, or rather the layers near the two surfaces may be so considered, and as the molecular combinations of the phosphoric acid and lime and the carbonic acid and lime takes place around the osteoblasts (which, as above stated, during their active formative changes give off the carbonic acid to render the lime for the time insoluble), there is a continuous process by dialysis of separation of these lime salts, which first make their appearance in the centre of the matrix trabeculæ where the two currents meet, as it where: from this point the calcification extends towards the surface. We look upon the formed matrix, then (or dead material), as playing the part of a dialysing membrane that serves to separate the lime salts prepared in its immediate neighbourhood by the carbonic acid-forming cells, this carbonic acid causing a throwing down of phosphates of lime with a small proportion of lime in which the phosphoric acid is usually replaced by carbonic acid. It should be observed in this connection that the carbonic acid is when acting on the lime solution, in a nascent condition, and therefore in a much better position to combine with any lime already held by the phosphoric acid."

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* Laboratory Reports of the Royal College of Physicians of Edinburgh, vol. ii., 1890, p. 142.

I am anxious to obtain some of those tuberculous sequestra, as I believe that an analysis of their composition will give us further proof of what I have here stated. As we know, newly-formed bones or new bone tissue of any kind, where the cells are extremely active in building up the matrix, almost invariably have a larger proportion of carbonate of lime than in fully formed bones, because here the active cells set free a larger proportion of nascent carbonic acid, as a result of which more phosphoric acid may be replaced by the carbonic acid lime salts; this may be observed in a growing bone, in callus, in exostoses, and in irregular bone formation generally. On the other hand, when the process of bone formation is complete, or when it is interfered with in any way, there is always a tendency to the more ready removal of the phosphate of lime on account of its greater solubility, and we therefore find in the bones of old people that although there is a slight excess of phosphoric acid in the fluids and tissues, the carbonic acid not being so readily given off by the less active cells, the proportion of carbonate to phosphate in the bone still remains high.

The three elements necessary, then, for calcification are (1) devitalised tissue in which we have albuminoid matter; (2) a layer of formed material, such as fibrous tissue or some membrane (in bone both these are represented by the matrix, the fibrous tissue which in the centre of one of the trabeculæ is practically deprived of cells, the layer near the surface being merely a membrane in which a few cells still remain), and (3) we have the layer of proliferating cells always found in the region of any foreign or dead mass, these cells being the osteoblasts of bony tissues, and amongst their functions as regards calcification perhaps the most important is the generation of carbonic acid.

We may take it, then, that in all inflammations of bone, the ultimate changes depend upon the character of the inflammation through the action of certain irritants on the cells, and these vary in the effects they produce, first, according to the intensity and nature of the irritant, and secondly, on the strength or power of resistance of the tissues or cells on which the irritant acts. In acute inflammations, for example, such as those induced by the action of the Staphylococcus pyogenes aureus, or, as it was at one time termed, the micrococcus of osteomyelitis, (other organisms may produce the same effect on injured bone tissue) the process is always of an exceedingly acute character; there is rapid accumulation and stimulation of cells, and as we have seen, all the effects of abscess formation; death of certain of the cells; increased activity of others, in consequence of which, not only bacteria and their products, dead cells, and the like, but also lime salts and bony trabeculæ, are gradually or rapidly devoured. In more chronic forms of inflammation we find that in place of this rapid digestion of the trabeculæ we may have an increased formation of bone, especially in those areas slightly removed from the irritative foci; there appears to be a very marked formation of irregular bony trabeculæ, and in these the deposition or calcification, though often irregular, may be extremely well marked; whilst even in chronic specific inflammations, certain of the cells undergo marked degenerative changes as the result of the irritant material secreted or excreted by the specific organisms, and in these dead cells a certain deposition of lime salts—a deposition which appears to account for the extreme density of bone in such diseases as chronic syphilis and tuberculosis —takes place.

Gentlemen, in treating a subject of this kind in a somewhat cursory fashion, it is difficult to avoid extremes ; you will find in the text-books very little information on the pathology of bone inflammation, for the reason that pathologists do not insist sufficiently strongly that the ordinary processes of inflammation are here being reproduced, and that any differences observed are only of minor importance. Again, our knowledge of inflammation is undergoing such rapid modifications that we have scarcely time to apply what we know to the simplest processes of inflammation as studied in the readily accessible and easily prepared tissues, so that one is apt to get prosy over details both old and new. On the other hand, because our reasoning in bone inflammation is always from the general to the special, we are too frequently led to propound theories, some of which it is difficult to follow, unless we have the whole train of reasoning that has brought us up to the point at which our theory is started. Much of what I have advanced may sound theoretical and may not be theoretically sound, but at any rate, from facts I have observed, it is so specious that it has recommended itself to me in the course of my work. Many points have still to be worked out, but on others we have already obtained much confirmation, often disconnected and sketchy, but still worthy of being fitted into a general scheme.

THE PHYSIOLOGY OF THE SALIVARY GLANDS.*

By Mr. Albert Leeming.

Mr. President and Gentlemen,—Having consented to prepare a paper to be read before our Society, my first thought was naturally the choice of a subject. After much study during the late hours at night, and the waking hours of the morn, it dawned on my mind that the subject which I am advertised by the syllabus of our Society to submit to you this evening, had not as yet been brought before your notice. It appeared to me to be an important one for two reasons, first, because it is necessary for us as dentists to thoroughly understand the origin of the various secretions of the mouth before we are able to recognize the origin of the definite elements of the deposits which we meet with in that cavity; and secondly, because it is a question which the examiners in Physiology are very fond of setting.

The subject is a very comprehensive one. The reason will be perfectly obvious to you all. There are so many, and such diverse opinions as to what really constitutes a salivary gland that one is apt to get confused. But it is not my intention to weary you with a recapitulation of the discussions of the many authorities on this matter, but rather to point out to you in as simple a manner as possible, the structure, differential properties, and physiological actions of those glands which are now generally accepted as true salivary glands.

All the glands of the mouth may be separated into different classes according to the nature of their secretions as follows:

(1) The serous or albuminous glands; as the parotid and lachrymal in man, and the submaxillary in the rabbit and guinea-pig.

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* Read at the Students' Society, Victoria Dental Hospital, Manchester.

(2) The mucous glands secreting in addition to albumen, a large quantity of mucin ; as the submaxillary and sublingual in the cat and dog ; and finally,

(3) The muco-serous or mixed glands, some of the acini secreting mucus, while others secrete albumen, as the submaxillary and sublingual in man.

To facilitate the description of these three kinds of glands, I desire first to direct your attention to their mode of development. The process is different according to the nature of the gland about to be formed. In all cases, however, a process of epithelium sinks down into the subjacent fibrous membrane. If a single gland is required, a cavity appears in this bud ; but for a compound gland other epithelial buds sprout out from its blind end. Each of these buds acquire a central cavity which gradually spreads out and elongates, whilst at the same time they increase in number ; the blind saccules in which they end are termed alveoli, or acini. All the salivary glands of man are of epiblastic origin.

In man the saliva is secreted by three glands, *i.e.*, the parotid, submaxillary, and sublingual. Their anatomical relations are very simple. The parotid is situated beneath the auricle, and its duct, Steno's duct, comes off from the anterior surface and opens into the mouth opposite the second upper molar. This tooth is often seen covered with tartar on its labial surface due to the presence of the duct in that situation.

The Submaxillary gland lies underneath the angle of the jaw, and its duct, Wharton's duct, leaves the gland with a small process of the gland and opens into the mouth at the summit of a papilla by the side of the Frænum Linguæ. The Sublingual gland is almond shaped, and is placed under the mucous membrane by the side of the tongue, at the floor of the mouth. Its ducts, known as the ducts of Rivini, open separately on the floor of the mouth, generally nearer to the internal surface of the inferior maxilla than to the middle line of the mouth. One large duct, the duct of Bartolini, joins with Wharton's duct prior to its entrance into the mouth.

Structure of the Glands.—The glands are soft brownish-grey masses shaped like an almond, and appear even to the naked eye to be composed of lobes, the divisions being seen quite easily. All the ducts and alveoli in which they terminate, are bound up by connective tissues carrying blood-vessels, nerves and lymphatics, into a compact, rounded, and somewhat lobulated mass, the gland proper. Each alveolus or group of alveoli and the small duct which leads to it is separated from its neighbours by a certain amount of connective tissue. A number of alveoli with the ducts leading to them are bound together into a lobule by a rather larger amount of connective tissue. Groups of smaller lobules are bound together by a quantity of connective tissue into lobes, and these are again covered with a strong sheet of that tissue which forms the wrapping for the complete gland. Hence a thin section when examined under a low power is seen to be divided into a number of irregular areas which are generally angular in form.

Therefore each gland consists of a Primary duct with branches running between the lobules, called Intralobular ducts, and others coursing into the substance of the lobes, known as Interlobular ducts. These continue forward as a narrow or intercalary portion, and finally end in an acinus, or a number of acini. Again, the gland is composed of lobes which can be broken up into lobules. And, lastly, the whole gland is covered by a framework which is pierced by arteries, nerves, veins, and capillaries.

The larger interlobular ducts, and all the intralobular ducts are composed of a membrane strengthened by fibrous and elastic tissue, (and in some places by a small amount of pale muscular tissue), lined by columnar epithelial cells. The smaller interlobular ducts are lined by a single layer of large cylindrical cells, with the nucleus situated about the middle of the cell: whilst the outer half is rodded, (due to the appearance of fibrils in the cell elements), the inner half, next the lumen, is granular. The intercalary ducts pass into the intralobular ducts by a narrow neck lined with cubical cells, with small flattened nuclei. The alveoli pass into the intercalary portion by a narrowed neck lined with flat cells with elongated nuclei.

I will now attempt to describe to you the minute structure of an acinus. Externally is placed a basement membrane, formed by many nucleated branched, and anastomosing cells presenting a reticulated appearance. There is also a homogenuous membrane bounding the alveoli in addition to this basket-shaped structure. Outside this membrane is a lymph space, and more external still, the network of capillaries is distributed. The cells in these alveoli vary in appearance according as the gland is a mucous, a serous, or a mixed gland.

In a mucous acinus the internal wall is lined by a single layer of mucin cells. These cells are more or less spheroidal in shape, clear, and shining, with a flat nucleus placed near the wall of the acinus. The cells very nearly fill the acini, so that there is little lumen left. Now, serous acini are lined by a single layer of finely granular columnar cells. Just before secretion, when the gland is quiescent, the cells are filled with granules which obscure the presence of the nuclei. We shall see, later, what relation these granules bear to the actual process of secretion. In mixed glands, there is often another species of cell-element present. For instance, in the submaxillary gland of a dog, there is a half-moon-shaped structure supervening between the single layer of cells and the wall of the saccule, near to the termination of the acinus. They are granular, dark, and devoid of mucus, and are spoken of as semilunar cells, or the composite cells of Hiedenhain.

I will now consider briefly the nervous forces required to produce a secretion in these glands, and also explain the histological changes occurring in a gland when stimulated by the action of these nervous forces. Under ordinary circumstances very little saliva is secreted. When, however, food is introduced into the mouth and the masticatory process commences the secretion goes on more or less rapidly, according to the stimulating or non-stimulating character of the food. The activity of a salivary gland is brought into play through the means of special nervous agencies when a stimulus is applied to the mouth. This stimulus commencing at the mouth travels to the brain,and is thence reflected to the glands. Thus the gland is stimulated reflexly, and I shall speak of two sets of nerves, one set *afferent*, carrying an impulse to a centre in the brain, and the other an *efferent* set, transmitting the impulse from that centre to the glands.

Afferent Nerves.—Stimulation of the mucous membrane of the mouth and tongue, whether chemically by means of irritating condiments, or mechanically, is generally transmitted by the sensory branches of the Fifth,and by the branches of the Glosso-Pharyngeal. The stimulus of the sense of taste is carried to the cortex in the cerebrum by the Glosso-Pharyngeal. The stimulating of the olfactory regions with certain odours induces salivation through a channel passing along the olfactory nerves, and thence to the special salivary centre. Even in the absence of taste or smell, mental impressions are perceived by the brain, and may cause an activity in the glands by means of the intercranial channel. In irritation of the gastric mucous membrane occurring in the sudden flow of saliva commonly preceding vomiting, the impulses are carried by the gastric branches of the vagus.

The Efferent nerves are derived from the two great nervous systems, the Sympathetic and Cerebro-Spinal. The Sympathetic fibres arise from the branches of the plexus which embraces the facial artery; those coursing to the parotid come from the plexus surrounding the Internal Maxillary. The Cerebro-Spinal fibres for the Sublingual and Submaxillary lie in the complex nerve, the Chorda Tympani which comes from the portio dura of the seventh, and joins the Lingual from the fifth. These pass thence through the submaxillary ganglion to the glands. The Cerebro-Spinal fibres for the parotid pass through the lesser superficial Petrosal nerve from the tympanic plexus to the otic ganglion and thence to the auriculo-temporal nerve, which sends twigs to the gland. The efferent nerves are for the most part medullated, and enter at the hilum of the gland where they form a rich plexus with ganglia between the lobules. Plüger says that the medullated fibres penetrate the acini; the sheath of Schwann united with the membrana propria of the acinus; the fibre, still medullated, passes between the secretory cells, where it divides and becomes non-medullated, and its axial cylinder terminates in connection with the nucleus of a secretory cell. Some, however, he describes as ending in multipolar ganglion cells, which lie outside the wall of the acinus, and these cells send branches to the reticulated membrane. Others, again, he describes as entering the attached end of the cylindrical epithelium lining the excretory ducts of the glands. He is of opinion that those fibres entering the acini directly, are cerebral, while those with ganglia in their course are derived from the sympathetic system.

Now, if the gland be stimulated by any of these methods previously enumerated, certain changes take place within the glands. They are classified as follows:—

(1) The cells are diminished in size.

(2) Their nuclei become more distinct, and of angular shape presenting a perfectly sharp contour.

(3) The lumen is larger.

(4) The contents of the cells are clearer.
(5) Flow of blood to the part.
(6) Evolution of heat.
(7) Greater production of CO_2

The following table demonstrates the state of blood-flow and capillary pressure, with the relative secretion, and amount of solids contained in such secretion, when the gland is stimulated; the impulse being carried by sympathetic, or by cerebral fibres:

	Cerebral nerve.	Sympathetic nerve.
Blood Flow ...	Accelerated ...	Slower
Capillary Pressure	Increased ...	Falls
Amount of Secretion	Great increase ...	Diminished
Amount of Solids	Small amount ...	Great quantity.

The theories on which the secretion of saliva is based, are very vague and unreliable. The most reasonable one is that the protoplasm of the cells takes up from the lymph certain materials from which it manufactures the elements of its own secretion stored up, as I have pointed out to you, in the form of granules during the period of rest, and these granules are subsequently discharged with, or without the addition of water.

The liquid saliva as it appears in the mouth is a mixture of the secretions of the parotid, submaxillary and sublingual glands, and various small buccal glands of the mouth.

The parotid saliva is a thin acid fluid with a specific gravity ranging between 1003-1004. After standing, it becomes turbid, and deposits carbonate of lime in the form of bicarbonate. Its principal constituents are ptyalin, a ferment; serum globulin, and serum albumin; potassium sulpho-cyanide, and a small amount of urea. It contains 1·5 per cent. solids.

Submaxillary saliva is more strongly acid than that of the parotid. It always contains mucin, ptyalin, carbonate of lime, and a trace of potassium sulpho-cyanide.

Sublingual saliva contains much mucin, numerous salivary corpuscles, and some potassium sulpho-cyanide.

Mixed saliva is an opalescent, tasteless, odourless, slightly glairy fluid, with a specific gravity of 1004-1009. It has an alkaline reaction. The amount secreted in twenty-four hours averages thirty-five ounces. It contains 0·49 per cent solids. It is composed of epithelial scales, mucus, ptyalin, albumin, potassium sulphocyanide, also several morphological constituents, such as salivary corpuscles, and various forms of protophyta, which propagate readily amid the decaying food in the mouth. The salivary corpuscles are slightly larger than white blood corpuscles, and are nucleated protoplasmic globular cells. While they are alive they exhibit molecular or Brownian movement.

The mixed saliva of the mouth has the following physiological actions.

(1) The most important is its diastatic action, *i.e.*, the power of transforming starch into dextrin, and some form of sugar. This is due to the presence of ptyalin, a hydrolitic ferment, which causes starch to take up water and become soluble, the ferment meanwhile undergoing no change.

(2) It dissolves substances which are soluble in water.

(3) It moistens all dry foods, thus aiding mastication, and the formation of a bolus, while by the mucin it contains it aids swallowing.

(4) It aids articulation.

(5) It is necessary to the sense of taste, to dissolve sapid substances in order to bring them into relation with the end organs of the nerves of taste.

And now, gentlemen, I desire to draw your attention to the following chemical analysis of tartar, or salivary calculus, taken from Sewill's Dental Surgery.

Earthy Phosphates	79.0
Salivary Mucus	12.5
Ptyalin	1.0
Animal Matter	7.5

I have shown that all these substances, with the exception of animal matter, are the characteristic constituents of the mixed saliva which is constantly poured into the mouth in varying quantities.

In conclusion, I feel that the appearance of my name as the author of this paper on the "Physiology of the salivary glands" calls for some explanation. It may seem a little presumptuous for one who has only just commenced on the bottom step of the ladder of our noble profession to address you on such a difficult and important subject. I have, however, not relied altogether on my own resources. I have made free use of the standard literature which is available to the students of this Hospital. To the best of my knowledge I have told you nothing original, but if I have assisted, by my fragmentary paper, any of my fellow students by ever so little, I shall feel amply repaid for my rather arduous task.

REID'S ANTISEPTIC LIQUID DENTIFRICE.

Thymol ...	2 grains		Glycerine ...	2 oz.
Carbolic Acid	5 drops		S.V.R. ...	4½ ,,
Oil of sassafras...	8 ,,		White Castile Soap	2 drs.
,, wintergreen	8 ,,		Distilled water to	16 oz.
,, rose geranium	8 ,,		Calcium phosph., a sufficiency	
,, eucalyptus	3 ,,		Colour	,,
,, calamus	5 ,,		Caramel... ...	,,
,, pumilio pine	20 ,,		Tincture of Cudbear	,,

Dissolve the soap in 5 oz. of warm water. Dissolve the acid, thymol, and oils in the spirit and add to the soap solution. Filter through paper containing a small quantity of calcium phosphate. Add the glycerine.

British Journal of Dental Science.

LONDON, JAN. 16th, 1893.

CONSTITUTIONAL DISTURBANCE DUE TO DENTITION.

THE time-honoured difference of opinion as to the eruption of teeth causing general symptoms, seems to be still maintained, and we find the same contradictory statements made by the opposing parties. Broadly speaking, the practical point in question arises in connection with the necessity, or advisability, for the use of the gum-lancet; for on the one hand those who deny the occurrence of symptoms due to teething, condemn the lancing of gums as useless, or even harmful, whilst for the other side, who maintain that constitutional disturbance may accompany difficult eruption, the use of the lancet certainly seems indicated. Indeed the relief which, it is claimed, results is naturally a strong argument as to the close relationship of the two conditions, pointing to the suggestion that they are not merely concomitant, but stand, rather, in the position of cause and effect.

Prof. Max. Kassowitz, of Vienna, was invited to deal with this subject when addressing a Section of a Medical Society, and accordingly took the opportunity of emphasising his former writings in which he insisted that apart from cases of punctiform hæmorrhage of the gums, &c., all those countless examples of disease befalling children during dentition have no other connection than that both, the diseases on the one side, and the physiological process of dentition on the other, occur in the same individual. He first dealt with the statement, sometimes made, that it was only by unprofessional people, or old-fashioned practitioners, that the other theory was held; and by quotations from well-known textbooks brought up to date, and by reference to recent communications, showed that this was not the case. Whilst stating that in Germany and Austria the formerly practised treatment by gum-lancing has quite gone out of use for some time, he referred to Italian, French, and English statements which showed that this method is much in vogue. The Professor has made careful observations in hundreds of cases and denies that there is ever any elevation of temperature to be referred to dentition ; he asserts that when such occurs there is always some condition, such as the exanthemata, pneumonia, &c., which may also be found in children not teething. It was also suggested that as Rachitis, and Cranio-Tabes, are now better understood, a further explanation is forthcoming of other symptoms, formerly attributed to teething. The importance of recognising such facts lies in the danger that it often happens that serious disturbances, which demand appropriate treatment, are neglected, to the detriment of the children, because they are ascribed to dentition.

Dr. H. Müller, of Zurich, comes to altogether different conclusions. Thermometric observations, when a minute examination has eliminated any other cause, enable him to state that there is a real dentition fever, which may rise to as high as 104° F. His tracings are interesting because they show that a complete, almost instantaneous fall of temperature follows the lancing of the gums. He advises that this little operation should be performed with antiseptic precautions, and that it should be ascertained that the child does not belong to a family of "bleeders."

For ourselves, we believe that, whatever the cause may be, whether due to heredity or some evolutionary process working in a new direction, it does undoubtedly happen that the period of dentition may be accompanied by a train of symptoms which marks the passage of a physiological process into a pathological condition. The rest of the digestive tract may suffer, as evidenced by the occurrence of colic, diarrhœa, and vomiting, and if the nervous system (at this age in an unstable condition and liable to respond readily to morbid stimuli) become further involved, convulsions may also ensue. It is often an open question how far such symptoms may be caused by irritation due to teething. The fact that they occur at other moments of infantile life, in consequence of improper feeding or exposure to cold, may account for their presence, accidentally so to speak, during the eruption of a tooth. Still when we find these symptoms coincide with a turgid, swollen, gum ; a hot mouth ; and that the speechless child directs attention to the spot by trying to overcome tension by pressure, we may reasonably conclude that the *fons et origo* is the tooth ; more especially as when the latter escapes, all the symptoms, both direct and reflex, quickly disappear. Although the use of the gum-lancet may still be condemned by some, its employment, in suitable cases, appears reasonable. Most general practitioners have, at some time, been called to a child cutting a tooth, who, after keeping the household awake for several nights, has, perhaps, been seized with convulsions. The crown of a tooth has been easily recognised beneath a swollen, more or less tense gum, and a simple incision in the case of an incisior or canine, or, as is more frequently demanded, a crucial incision over a molar, has resulted in cessation of all symptoms, and a good night's rest to all concerned. Such treatment, in such a recognised pathological condition, is infinitely better practice than the administration of so-called "teething powders," which, when they contain preparations of mercury, as is too often the case, can only be alluded to for the purpose of condemnation. The occurrence of undue hæmorrhage, and septic infection, may, with proper care, be ignored ; whilst the formation of a cicatrix, which is said to retard the advance of the tooth, can only take place where the incision has been prematurely made, and even in such a case the more lowly organised tissue may be expected to give way without trouble.

Pental.—Last year we published a tolerably full translation of Dr. Kossa's report upon this anæsthetic, which had been used long ago under the name of Amylene. Pental is supposed to be a purer form, and appears to be still used upon the Continent. A recent summary of 117 minor operations, performed during anæsthesia by Pental, has been presented by P. F. Fedoroff. The drug was administered in an inhaler, and the least amount required to produce complete unconsciousness, is about six grammes. The corneal sensitiveness does not seem to be altogether abolished, there is no muscular relaxation, and, as a rule, no excitement. It is stated that in half the cases the pulse was not affected, but in some others, vascular tension was lowered. Kossa's experiments showed that the heart-action outlasts the respiration : in one case, the heart beat sixteen minutes after breathing had ceased. The present report states that the patient's breath has a strong smell of pental for a quarter of an hour afterwards, and this also agrees with Kossa's explanation as to what becomes of the drug. Some of it is burnt up as carbonic acid and water, but another parts without undergoing decomposition, is separated at the lungs- This was shown by giving it internally to a rabbit, when its presence was detected in the animal's breath. In Fedoroff's cases, the average duration of the anæsthesia was from two to four minutes.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.—This old and well-known Society has just brought another successful year's work to a close. The number of candidates for membership has surpassed previous records, and the attendances at the meetings have been very satisfactory. Besides the usual change in officers at the Annual Meeting, there was at least one resignation of more than common interest. Mr. Thomas Arnold Rogers, who is one of the original members, and who has served the Society in nearly every office, has been the Treasurer for many years. It must, no doubt, be a matter of much satisfaction to this gentleman, to leave the Society's finances in such a flourishing state, on relinquishing his duties. He is to be succeeded by Mr. S.

J. Hutchinson, a past President of the Society. Mr. W. H. Coffin, who retires from the Editorship of the Transactions, is followed by Mr. E. Lloyd Williams.

NEW DENTAL HOSPITALS.—As announced at the Annual Dinner of the Dental Hospital of London, it has been definitely decided that the time has arrived for erecting an entirely new building. We believe arrangements have been made to secure a new site in Leicester Square, and we are glad to think that a change of locality from such a central position will not be found necessary. An appeal for the requisite funds is now being made to the friends of the School, and we hear that the response so far has been all that could be desired ; over £5000 has already been promised, but as £40,000 is asked for, there is still an opportunity for those old Students who have not yet subscribed, to show their appreciation of their Alma Mater.

FROM the *Boston Herald* we learn that a meeting has been held to increase the public interest in the work of the dental department of Harvard University. The school has now been in existence twenty-four years, and after many vicissitudes has enjoyed the hospitality of the University for the past few years. It has an endowment of some 22,000 dollars, and a gross income of about 14,000 dollars. It is out of debt and self-supporting, but it needs a building of its own, as its operating rooms and laboratories are not suitable. Promises of support were forthcoming, and a strong executive committee was appointed to take charge of the work in hand

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OPHTHALMIA IN PAUPER SCHOOLS.—Some three years ago special buildings were erected at Hanwell, in connection with the Central London School District, for the isolation and treatment of cases of ophthalmia occurring in children. That this was a wise proceeding appears manifest from the results mentioned in Dr. Sydney Stephenson's Report. The numbers have so decreased that nearly half the wards are now unoccupied, and last year out of 163 children discharged from the ophthalmic department into the general school, only 5 have been re-admitted. The children are not allowed to suffer in their education whilst in the isolation buildings; school-work, with a staff of teachers, is carried on to such good account that the examination results are at least as good as those obtained in the general School. It seems unfortunate that arrangements cannot be made by other School Districts to send their cases of ophthalmia to Hanwell, and thus reap the advantage of the systematic treatment, nursing, and teaching there obtainable; at the same time rendering useful the empty wards.

CONTAMINATION OF MINERAL WATERS.—*The Lancet.* Analytical Commission has been inquiring into the action of carbonic acid upon the metals used in the machinery for the manufacture of aerated waters. Lead, copper, zinc, and iron, all seem to be affected by water containing carbonic acid. Tin did not appear to undergo the slightest change, but is not so workable as many other metals, whilst it is very expensive. Copper is largely employed in the construction of aerated-water machinery, and it seems that by lining this metal with the purest grain tin, a satisfactory condenser can be obtained. Tin piping and joints are also used, whilst the syphon-heads have in addition a small proportion of antimony to ensure durability; but no lead, nor copper, was found in any single instance.

Abstracts of British & Foreign Journals.

COCAINE.

M. Bignon (*Bull. de. Therap.*) formulates the results of his experimental researches as follows :—

1.—Cocaine parts with its valuable anæsthetic properties in a decidedly acid solution.

2.—In such solutions its power as an anæsthetic is not destroyed, but becomes latent.

3.—The anæsthetic property is fully restored by simply neutralizing the acid.

4.—All the mineral and organic acids used in the experiments operated in the above manner.

5.—The anæsthetic energy of cocaine attains its maximum when, all its acid having been neutralized, the alkaloid is held in suspension by a slightly alkaline liquid. This preparation the author calls milk of cocaine.

6.—Milk of cocaine is obtained by precipitating the hydrochlorate or other salt of cocaine by a slight excess of carbonate of soda. The bicarbonate does not act so well.

7.—Most of the cocaine salts, especially the hydrochlorate retain an appreciable quantity of acid ; hence their solutions do not possess the full anæsthetic potency ot the alkaloid; *i.e.*, a portion of the same remains latent.

8.—The anæsthetic power of cocaine salts varies greatly in different cases. Some crystallized hydrochlorates, though perfectly pure, are so acid, that 10 centigrams, simply dissolved in water, are no more efficacious than half the quantity when neutralized and made into milk of cocaine.

9.—The surgeon's first care, therefore, before using a solution of any cocaine salt, should be to assure himself of its neutrality; this can only be obtained at a sacrifice of limpidity; it is accompanied by some degree of opalescence.

10.—The difference in the quantities required for production of anæsthesia, is in most cases explainable by the difference in the acidity of the solutions employed.

11.—The effect of subcutaneous injections of milk of cocaine on the human subject has yet to be ascertained. Experiments on dogs have given encouraging results in this direction, but the author has not succeeded so far in localizing the action. Milk of cocaine should always be prepared extemporaneously; as by keeping, the alkaloid is thrown down from the solutions, and much of their efficacy is lost.

Medical and Surgical Reporter.

CORROSIVE SUBLIMATE AS A GERMICIDE.

By CHAS. P. MCCLINTOCK, A.M.

In 1881 Koch recommended corrosive sublimate as the most efficient of all known substances for disinfecting purposes. Since that time it has been universally used. After making some hundreds of experiments the author finds that Koch and those who have confirmed his work, based their conclusions on faulty experiments, the most important of which was the failure to notice that the sublimate formed with the gelatinous coat of bacteria a compound insoluble in water, but soluble in salines, and readily removed by the blood. When bacteria treated with sublimate were transferred to gelatin or agar, the capsule of mercury compound prevented the growth of the germ, and the false conclusion was drawn that it was dead. In the author's experiments this capsule of mercury was removed by precipitation with hydrogen sulphide.

The experiments also indicate that the larger number of bacteria in a given culture are comparatively easily killed and that the ratio of those killed by a germicide to those that survive is of no value. Some of the conclusions drawn from the experiments are :

(1). That the high rank heretofore given corrosive sublimate as a germicide is without warrant, and was based on faulty experiments.

(2) Different cultures of the same germ may vary largely in their resistance to germicidal agents.

(3) Corrosive sublimate forms with cellulose, with silk, with albuminous bodies, and with some parts of bacteria, a compound that cannot be removed without washing. When acting on a germ it forms a capsule around the germ, which protects it from the further action of the germicide and in turn prevents the growth of the germ unless removed. But this capsule may be removed by the solutions, as in the blood.

The action of sublimate on bacteria is probably closely analogous to that of alcohol, etc.

(4) The presence of a gelatinous envelope in many, if not all, bacteria has not received due attention from writers on this subject.

The Ohio Journal of Dental Science

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, December 5th, 1892. Mr. J. H. Mummery, M.R.C.S., L.D.S., President, in the chair.

The Minutes of the last meeting having been read and confirmed,

Mr. Henry Williams Messenger, L.D.S.I., Clairville, 47, Rosslyn Hill, Hampstead, N.W., was elected a Resident Member.

Messrs. G. W. Bateman and J. F. Colyer were appointed auditors.

Mr. J. J. Andrew, having signed the Obligation Book, was formally admitted to the membership of the Society by the President.

The following nominations for Resident membership were read:—Mr. William Thomas Trollope, L.D.S. Ireland; Mr. Frederick Walter Barrett, L.D.S. Eng.; Mr. Ernest Henry Lewis Briault, L.D.S. Eng.

The President said it was his painful duty to again have to record the death, since their last meeting, of a former member of the Society, viz., Mr. Henry Moon, who took a great interest in the Society for many years, and was, he believed, for three years Vice-President. He was sure that the members would hear of his death with great regret.

The Librarian (Mr. Ashley Gibbings) reported the receipt of a parcel of books which had been kindly presented by Dr. Dudley Buxton, including:—"Compendium of Practical Dentistry," by B. Catching; "Deformities of the Mouth," 3rd edition, by Oakley Coles; "Aide Memoire du Chirurgien-dentiste, 1ere partie, Thèrapeutique de la Carie dentaire," 2eme edition; "System of Oral Surgery," by James E. Garretson; "Dental Chemistry and Metallurgy," by Clifford Mitchell; "Medical Digest," 2nd edition, by Dr. R. Neale; "Index to the Periodical Literature of Dental Science and Art, as presented in the English Language," by J. Taft; "System of Dental Surgery," 2nd edition, by J. and C. S. Tomes. He also reported that "Practical Pathology," by Dr. Sims Woodhead, had been added to the Library, also the numbers for 1892 of the *Journal of Pathology and Bacteriology* edited by the same author.

The CURATOR (Mr. STORER BENNETT), announced the receipt of a first left upper molar, having the sac of an abscess in the fork between the fangs, instead of in the usual position at the apex of one of them. The specimen was presented to the Society by Mr. Oswald Fergus, of Glasgow. Mr. Bennett showed also a specimen of gemmation of an upper temporary incisor and a supplemental tooth, which was presented to the Museum by Mr. Montague F. Hopson.

Mr. W. BOWMAN MACLEOD said that as he was coming to London he had taken the opportunity of bringing with him a specimen of a skull which belonged to Dr. Johnson Symington of Edinburgh, who had exhibited it at one of the recent meetings in that city, and he (Mr. Macleod) thought it would be of value to the Society. The point of interest in the skull was, not the rarity but the extraordinary number of ordinary irregularities which the teeth exhibited. On the left side a temporary canine might still be seen standing ; then there was a bicuspid inverted and the eye tooth behind it ; the first and second molars were irregular, and in a crypt behind them the wisdom tooth presented the coronal surface to the posterior part of the mouth. He was sorry to say that in transit the wisdom tooth had dropped out of the crypt, but they might take his word that it was originally there. On the right side the same condition of things existed, the coronal surfaces pointing backwards. There was no evidence of a wisdom tooth on the right side, but on shaking the skull one could hear that there was a loose body either in the crypt or in the antrum. Further, having heard that some gemmated teeth were to be presented, he thought that he might bring a few to bear them company. These teeth, he said, spoke for themselves, and there was no necessity for any special explanation. They included an upper molar gemmated with the second molar, also two lower molars in the same condition.

The PRESIDENT remarked that the skull was of very great interest, and he should be glad if they might photograph it.

Mr. G. BRUNTON suggested that a cast might be taken of it.

Mr. BOWMAN MACLEOD said that he would be happy to leave the skull in the care of the Curator, and in the meanwhile would communicate with Dr. Symington, who, he was sure, would readily give his permission.

Mr. ACKERY showed a patient a lad of 16 years, who had lost the crowns of all his teeth from caries. He said he was sorry he had been unable to obtain a very perfect history, but so far as his investigations went, there was no suspicion of syphilis, rickets or struma. The lad was the seventh of a family of nine, all the others being healthy. He was healthy at birth (though his mother was very ill prior to that event), and remained so until he was ten months old, when he had a severe attack of bronchitis, the doctor who attended him saying that he would never be well for the rest of his life. From this time until he was seven years old he constantly brought up his food as soon as it was taken. From seven to thirteen he was better, but since that time has been unable to swallow solid food, and at intervals for the last three years had attacks of dysphagia, being quite unable to swallow even fluids from twenty-four to thirty hours at a time. He did not cut any teeth until he was twelve months old, and they then came slowly. His permanent teeth were erupted at the usual time, but never appeared strong, and commenced to decay as soon as cut. He was in the hospital at Cambridge four years ago, suffering from anæmia and debility. He was admitted at St. Bartholomew's Hospital some four weeks back, said to be suffering with dysphagia, but he had no difficulty in swallowing during or since his stay. He was sent to the dental department and was fitted with a complete upper and lower set of teeth with springs, the only two apologies for teeth—a second lower left bicuspid and second lower left molar which were only partially erupted and decayed so far as they were above the gum being removed, all the other roots being allowed to remain. Thinking from the boy's appearance that he might have some kidney mischief, his urine was examined, with the following negative result:—sp. gr. 1012; no albumen; no sugar; no deposits; slightly acid. The patient was anæmic, but in other respects well and very intelligent. His father has had very strong teeth, and though his mother has suffered at times with hers, they are of average quality. Mr. Ackery said that so far as his own experience was concerned such entire decay was unique, and he could only attribute the fearful ravages of caries to gastric disturbance, and the possible eructation of gastric juice. Since the teeth had been fitted there was a marked improvement in the boy's health and appearance.

The PRESIDENT enquired whether all the roots were present.

Mr. ACKERY said as far as he could judge all the roots of the teeth were present. He might say that he could get no history of rickets, and there was no evidence of any such condition about the boy's frame; he was looking better now than when he first saw him.

Mr. **Walter Coffin** asked what was the reaction of the saliva?

Mr. **Paterson** took it that there was no doubt in Mr. Ackery's mind as to the causation? The constant regurgitation of the gastric juice had passed through his mind.

Mr. **Ackery**, in reply to Mr. Coffin, said that he had not many opportunities of seeing the lad under varying circumstances, but when he first saw him in the middle of the day, two or three hours after food had been taken, the condition of the saliva was a little acid, but nothing very marked. With regard to Mr. Paterson's remarks, he would not pledge himself, nor had he come to any very distinct conclusions as to the cause. He had thought that the bronchitis might have produced gastric disturbance, and probably the saliva might have been acid, or, as Mr. Paterson had suggested, there might have been the irritation set up by the gastric juice.

Mr. **E. Lloyd Williams** showed a specimen sent up by Mr. Rowney (Derby), somewhat similar in character to those exhibited by Mr. Macleod. The mass, which came away in the attempt to extract one of the teeth, included the second bicuspid, first molar, and second molar of the upper jaw (left), and was firmly held together by the alveolus, which was necrosed, whilst the posterior buccal and palatine roots of the first molar were fused to the anterior buccal of the second molar. One point of interest which was noted, was the somewhat rare occurrence of *cementosis*, causing the absorption and actual perforation of the alveolar plate. The roots of a lower molar were also shown from the mouth of the same patient—a gouty clergyman 58 years of age - demonstrating the tendency to cemental deposit.

Dr. **G. S. Woodhead** then read a paper on "Inflammation in Bone," which is published at page 49, and which was illustrated by twenty-five photo-micrographs, and other lantern slides.

Discussion.

The **President**, in opening the discussion, spoke of the great interest and valuable nature of Dr. Woodhead's paper.

Mr. **H. Baldwin** wished to ask how far proliferation accounted for the enormous number of cells? He thought that the latest teaching was that the cells were all migrated leucocytes, and that there was no proliferation at all until the activity of the inflammation had passed away, and then the original tissue-cells proliferated only with view to repair.

Mr. F. J. **Bennett** desired to ask whether Dr. Woodhead considered, in that portion of forming bone known as the calcified cartilage trabeculæ, the loss of nutrition in the intercellular substance, resulting from the swelling and disappearance of the cartilage cells, was the cause of the calcification of this intercellular substance, previous to its absorption?

Mr. C. S. **Tomes** said that it was rather difficult to discuss a paper such as that read on a short notice and without careful reading, but he should like to amplify Mr. Bennett's question, viz., was normal calcification to be regarded as deposition of calcareous matter in practically dead material as a matrix? There was one little difficulty which passed through his mind, that was, in one's knowledge of bone, and more especially of dentines, one always found that any dentine that was to last through a considerable part of the life of an animal was very freely penetrated by fine canals. Thus dentines, which were less penetrated, with few vascular canals, and with no fine tubes, occurred in almost every instance in teeth which were cast off in a short time, and were constantly being replaced by new ones; so that it would seem that dentine which was to last any length of time, must be penetrated with a copious tube system. That did not quite jump with the idea that all the calcification was within a dead sort of tissue. Another point was, if the matrix of bone prior to, and after, the deposition of lime salts was practically dead tissue, one wondered at the intolerance shown by contiguous tissue towards absolutely necrosed bone. He seemed, perhaps, to be fighting the air, but he was giving utterance to what was passing through his mind, while the paper was being read.

The **President** remarked that it struck him that this view of the deposit of calcified material might have some relation to the secondary deposits in the pulps of teeth which are the seat of some degenerative process.

Mr. **Roughton** asked Dr. Woodhead whether he had observed the large multinucleated cells which he had demonstrated on the screen to take part in the formation of new blood-vessels? Dr. Woodhead had, he believed,' described and figured a similar process in inflammation of soft parts. It was well known that in the vascular area of embryo chicks, the subcutaneous tissue of rats, &c., cells, precisely similar in appearance, developed into capillary blood-vessels. In a paper on "Blood Tumours of Bone" which Mr. Roughton had published in the *Transactions of the Royal Medical and Chirurgical Society* (vol. lxxiii.), he had suggested that the multinucleated cells of myeloid sarcoma developed into capillaries. He had since actually observed the process in sections of myeloid sarcoma of bone; he had seen the myeloid cells undergoing vacuolation, and developing, within their substance, spherical bodies which he thought were embryonic blood corpuscles.

Mr. W. **HERN** said there was one point in dental pathology which appeared to antagonise with Dr. Sims Woodhead's view of the deposition of bone salts in dead tissue, and which agreed with Mr. Charles Tomes's criticism. In the cementum of the roots of teeth, which is a body somewhat similar to bone, depositions of fresh calcified material frequently occurred, causing exostoses. The deposit, however, always occurred on living portions of cementum, and never on dead portions. In cases of necrosis of the apices of roots, no fresh cementum was ever deposited on the dead tissue, although it was frequently deposited on the living cementum around.

Mr. W. B. **PATERSON** wished to join a question to that of Mr. Roughton's as to the giant cell or absorbing cell—how did Dr. Woodhead account for the development of the giant cell? Did he think it a leucocyte in the first instance? Did he think it grew at the expense of the tissue it ate, or did he think it a cell which had a connection in destroying tissue, not by absorbing and growing at its expense, but by secreting an acid? On the question of abscess tension he was somewhat mixed in his ideas of what had been said; as he followed Dr. Woodhead, he understood him to say that this tension was not mechanical, but he presumed that Dr. Woodhead was referring to it in some other way than that which they recognized as the tension which in all abscesses caused pain, and which did seem to be of a mechanical nature. He (Mr. Paterson) understood that the pus is dialysed through the cells of the abscess wall so-called, and makes towards the centre, if there be at the centre some foreign matter or irritant, *e.g.*, tubercle or embolus, or parasite. Might it not be equally possible for the dialysing or straining process to take place in the opposite direction under certain circumstances, and might not a serious danger thereby arise of septicæmia, unless the cells of the abscess wall offered a barrier of resistance to protect the system in some way?

Dr. WOODHEAD, in reply, said in answer to the question as to proliferation, he had at one time believed that the increase in the number of cells was entirely due to the passing in of leucocytes, and of course that was Cohnheim's teaching; but they must look upon the cells in any position—part of an inflamed area—as being irritated, and as they knew that with any irritation proliferation took place. He had tried to follow the history of these cells in various parts of an abscess, and although the leucocytes played perhaps the most important part in early stages, there was undoubtedly proliferation in connective tissue cells; they first of all lost their irregularity or their branching processes, the protoplasm of which seemed to be drawn in, and then, undoubtedly, a proliferation of these fixed cells took place. Of course, in the later stages it was now evident that the connective tissue cells played a most important part, they played the part not only of scavengers, but by them the new tissues were built up; but even in the initial stages they always found that the connective tissue cells by proliferation took part in forming some of the new cells at the point where the abscess occurred. These cells, of course, could not ordinarily be distinguished in the centre of the abscess, but at some little distance from the margin of the abscess area it was possible to distinguish them, and at the margin of the abscess one found the connective tissue cells and the fixed cells generally retaining many of their normal features. In the later stages they played a much more important part; they then took on the functions which were associated with repair; they assumed a regular form, and altogether overshadowed the leucocytes. As regarded the giant cells, he had been asked if he had seen them in connection with the formation of vessels in bone; he had not noticed this in bone, and it was an exceedingly interesting fact that Mr. Roughton had been able to demonstrate this in connection with sarcoma, and as having a special relation to the formation of vascular areas of the giant cells, he should very much like to see this. Then as regards Mr. Tomes's question in connection with the dead cells, he (Dr. Woodhead) looked upon the matrix, perhaps not as dead, but as practically devitalised and *passive* tissue; it was no longer tissue which played any *active* part in connection with the body. With regard to the question of the formation of cementum, he thought it was quite possible these cement canals, with their small protoplasmic processes still connected with the active cell, played a most important part in determining the process of deposition in dead bone, because one knew that in dead substances the quantity of decalcified material was exceedingly small. In order that it might be precipitated in a finer condition and therefore, in a much denser condition, because in a large area and in connection with the large membrane around a large quantity of dead matter, one always found it as coarse calcareous particles; whilst in the cementum they had the lime salts deposited as the result of a slow separation by fine films of protoplasm, and precipitated in a fine organic membrane. These channels, with their contained processes, appeared to him to play an important part in conducting the lime salts away from the organic matter in which they could be held in solution. As regards giant cells, he looked upon these as cells in which, although the protoplasm did not break up into smaller cells, the nuclei divided sometimes pretty rapidly wherever one had a large area to be nourished rapidly and thoroughly, that is, where protoplasm had to take up nutrient material rapidly. It is also supposed that these plasmodia were more active in taking up and digesting foreign material than individual cells were. With regard to Mr. Paterson's question, he wished to say that the tension in an abscess was not brought about by any mechanical process. As regards dialysis also, he looked upon it as playing a comparatively unimportant part; it was not merely a question of dialysis, but of the cells coming from the outside towards the centre, and he, therefore, looked upon it as not merely a process of dialysis, but one involving something very much more. Then there was no doubt that the granulation tissue layer, the so-called pyogenic membrane at the margin of an abscess, did afford very great protection against the absorption of poisonous substances from an abscess, this being due to the fact that they were made up of a large number of cells which had not been acted upon by the poisonous material, and which still retained a power of transforming such material as reached them into comparatively innocuous substances.

The usual votes of thanks concluded the meeting.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The usual Monthly Meeting of the Students' Society was held on Friday, December 2nd. W. Robinson Humby, Esq., in the chair.

The Minutes of the previous meeting having been read by the Honorary Secretary, Mr. Cecil Bascombe, and confirmed, Mr. Humby gave the usual form of welcome to any visitors present, expressing the hope they would consider themselves members of the Society for the evening, and would take part in any discussion raised upon the paper read, etc.

CASUAL COMMUNICATIONS.

Mr. **WOOLF** brought forward two or three interesting specimens of a crocodile's tooth, and two shells.

Mr. **HUMBY** showed some bar work, which had formerly been worn by a patient, and since removed by him (Mr. Humby), in a most putrid state, pus oozing up from all the roots to which the bar-work was attached. He said he did not consider bridge and bar-work at all advantageous to the patient or the operator ; that after a year or two, perhaps less, the results were disastrous. In this particular instance, the patient came to him, as mentioned before, with the mouth in a very unhealthy state.

Mr. H. G. **READ** said he fully concurred with Mr. Humby as regards the value of bridge and bar-work, and that sooner or later it *always* gave way at the cervical edge.

There being no more casual communications, the President called upon Mr. Reginald Nicholls to read his paper, entitled "The Art of Extraction," which we have already published. An interesting discussion followed.

Mr. **HUMBY** said he considered it a very good paper. He entirely agreed with everything Mr. Nicholls had said; he (Mr. Humby) wished, however, to add a word or two to the otherwise excellent paper. He found the use of Cocaine for pain after extraction a very good remedy, this he had used after trying all other remedies. In hæmorrhage after extraction he considered perchloride of iron should not be used until everything else had been tried ; the most powerful way of using it was by making a preparation of perchloride, then dipping wool into it, and letting it dry before using it. Another remedy was tannin, water, and wool, dried before using. Another way was for the patient to take half a teaspoonful of tannin at certain intervals, until bleeding ceased.

For Secondary hæmorrhage (within ten days after extraction) patients should be careful, and be cautioned during that period.

Mr. H. G. **Read** said they must all agree that Mr. Nicholls had read a very good paper; he agreed with him that the too early extraction of the six-year-old molar was not advisable, owing to the driving forward of the two front teeth; he found strong eau-de-cologne a very good remedy for pain after extraction. As regards hæmorrhage, he plugged the sockets with wool dipped in mastic.

Mr. **Woolf** said he entirely agreed with the way to which Mr. Nicholls advised the forceps to be held; he contended that in cases of exostosis, and other difficult extraction cases, inflammation being set up after 3 or 4 days, the extraction would be found easy. He had used Iodide of Potassium, or Carbonate of Potassium, for pain after extraction, also Morphine, or leeches behind the ear for pain after lower wisdom extractions.

Mr. **Rushton** said one great fault he had observed in extraction was the quick jerky action, and insufficiency of penetration. With regard to temporary teeth, as a rule the tooth should be grasped and withdrawn without the gum being touched at all. If a tooth was broken down on the inner, or lingual surface, the greatest pressure should be used on the outer surface. Mr. Nickoll's caution about the pressure on the lips was very important; sometimes a sharp piece of the socket, broken off and left in, gradually worked up out of the gum and gave rise to a great deal of pain. The reason of perchloride of iron being so irritating, was the presence of hydrochloric acid. He found in hæmorrhage, after extraction, that after syringing out the socket, or sockets, of the bleeding tooth, a few layers of Japanese paper, wetted, and with powdered tannin, an excellent cure.

Mr. **Clarence Read**, (Guy's Hospital) said Mr. Nicholls had omitted to mention one cause for extraction—polypus of pulp. In this disease, the canals were very much enlarged, fibrous tissue growing up into the pulp. He laid great stress upon closing the alveolar walls after extraction; it should always be done, if only to alleviate pain. In extracting bicuspids, he advised rotation with inward and outward movement. Dislocation of the jaw had occurred when the prop has slipped during administration of anæsthetics, the operation having been still continued. As regards preventing hæmor rhage, pressure was a great thing; he advised Carbolic and Liquor Potassæ for pain after extraction.

Mr. **Nicholls** having replied at length, a vote of thanks was accorded to him; and the meeting adjourned to the second week of January, 1893, when Mr. Humby delivered his Valedictory Address.

Mr. Nicholls' paper was illustrated by a splendid collection of instruments.

STUDENT'S SOCIETY, VICTORIA DENTAL HOSPITAL OF MANCHESTER.

Second General Meeting, Nov., 29th, 1892. The President, Mr. P. A. Linnell, in the chair.

The minutes of the last meeting were duly read and confirmed.

The following gentlemen were balloted for and unanimously elected members of the Society, viz.—Messrs. Bellaby, Booth, Forsythe, Rhodes, and Wood.

The Casual Communications were as follows: —

Mr. **Lees** showed a blowpipe of his own construction suitable for ordinary dental bench-work.

Mr. **Lingford** shewed two photographs, one of a man who had lost a considerable portion of his face through syphilis, while the other represented an artificial substitute in position.

Mr. **Sibson** exhibited a three rooted lower molar.

Mr. **Mawson** exhibited a model showing a supplemental tooth in the incisor region.

Mr. **Theakston** showed a molar tooth he had extracted with a tack firmly fixed in the pulp cavity.

Mr. **Linnell** exhibited a root he had extracted, through the side of which a screw tube, carelessly put in for a pivot, projected some considerable distance.

In connection with Mr. Theakston's exhibit Mr. D. **Headridge** mentioned a case of a nail in a pony's tooth which had caused the death of the animal. He had the skull of the pony in his possession at the present time.

Mr. LINNELL then read aloud the questions which had been placed in the question box during the evening, which will be discussed at the next meeting. He also announced the presentation to the Society of a number of microscopic slides by Mr. A. B. Sibson.

Mr. A. LEEMING was then called upon to read his paper on the "Physiology of the Salivary Glands," which is published at page 65.

The PRESIDENT in opening the discussion said that he thought all present had listened to Mr. Leeming's paper with much pleasure, and that Mr. Leeming had suitably divided his paper into three parts, viz:—Histology, Nervous Mechanism, and Chemical Physiology.

Mr. F. L. TANNER, said he must compliment Mr. Leeming on the trouble he had taken to prepare his paper and diagrams Hehimself thought that members in the preparation of their papers should bear in mind to avoid as far as possible the details of Anatomy and Physiology as such was accessible to them in various text-books. Other points could instead be dwelt upon, such as the Pathological conditions, which were of more interest to all members and tend to more interesting discussions.

Mr. D. HEADRIDGE, said he listened with great pleasure to the paper as one which would serve to open discussion on several points. The saliva was of great importance in digestion as pointed out by Mr. Leeming and a large amount of diastatic ferment was daily required. In man this ferment is chiefly derived from the parotid gland, and in many animals this gland is highly developed, but the secretion has not the same action; in some animals assisting the formation of food into a bolus, in others partaking of a poisonous character. Now the herbivora such as Ruminants have very large glands, but their secretions have no diastatic action. For the ferment to act it must come into direct contact with starch granules thus necessitating the rupture of the envelopes of cellulose around the granules and as in horses, sheep, etc., this does not take place diastatic ferment in the mouth is not requisite. In some animals saliva of a more viscid character is required.

In man, saliva is not secreted until the 3rd or 4th month after birth thus pointing out the unsuitability of farinaceous food in early infancy. Human saliva is capable of exercising a poisonous influence, as experiments have shown that when injected into the system, micro-organisms have been found, the result proving fatal in 24 hours. These poisonous qualities are developed in man by such causes as excessive mental agitation. This is regarded as an explanation of the poisonous effects produced by the saliva of venomous snakes, the snakes being so liable to injury and such injury, tending to anger them, and thus produce the more poisonous action of their saliva.

Mr. Bostock said he would like Mr. Headridge to give the authority for the poisonous action attributed to human saliva, as the general text-books on the subject stated healthy saliva to be harmless.

Mr. Lingford said he could hardly agree with Mr. Tanner's remark about the papers read at the meetings, and thought that the subject announced should be adhered to, and that when Physiology was the subject, one could hardly expect that Pathology would be entered upon. He complimented Mr. Leeming on his diagrams, etc., as it was a step in the right direction which would make the evenings more profitable to all, and suggested that a paper should be read next year on the Pathology of the Saliva with the action of various drugs.

Mr. Sibson said he was very pleased with the paper and the drawings done by Mr. Leeming on the blackboard, and he agreed with the remarks made by Mr. Lingford. So many subjects had been brought before the Society, it was difficult to choose one that had not been previously given, whereas the present paper reminds members of much that they may have read, and not clearly matured, and on that account he welcomed it.

The President in closing the discussion, thanked Mr. Leeming on behalf of the Society for his paper, to which Mr. Leeming suitably replied.

Mr. Bostock announced that at Mr. Leeming's request, he had brought to the meeting microscopic specimens of salivary glands for inspection.

Mr. Sibson made a similar communication.

Mr. D. Headridge announced that the microscopical demonstration of Comparative Dental Anatomy owed its efficiency to the kindness of Messrs. Hooton and Dunkerley in lending their specimens, and proposed that a special vote of thanks be accorded them.

Mr. Birkett seconded the proposition, which was carried unanimously.

The meeting then adjourned.

Dental News.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL.

The Seventh Annual Dinner in connection with the above Society, was held at the Grand Hotel, on Saturday, December 17th, the President, Mr. P. A. Linnell, occupying the chair. There was a large attendance of members and friends, the company numbering upwards of fifty. Among those present were Prof. Young, Mr. Hardie, F.R.C.S., Mr. G. G. Campion, Mr. P. Headridge, Mr. Reuben Spencer, J.P., Dr. Stallard, and others.

After an excellent dinner, Mr. P. A. Linnell proposed the usual loyal toast of "The Queen," which was duly honoured amidst loud applause.

Letters of regret for non-attendance were read from Prof. Hare, Mr. Edwards, Dean of the Liverpool Dental Hospital, Mr. Simms, etc.

Mr. F. L. Tanner proposed the "Manchester Medical and Dental Schools," which was responded to by Prof. Young, for Owen's College, Mr. Hardie, F.R.C.S., for the Royal Infirmary, and Mr. G. G. Campion for the Dental Hospital.

Mr. P. Headridge proposed "The Students' Society," and this was ably responded to by Mr. A. L. Bostock. Mr. J. C. Lingford proposed "Our Guests and Visitors," to which toast Mr. Reuben Spencer, J.P., replied.

The final toast was that of "The President," proposed by Mr. J. Butterworth, and drunk with musical honours.

During the evening several songs and pianoforte solos were given by Messrs. Walker, Jones, Butterworth, Lingford, Kershaw, and Dr. Stallard. Altogether a most enjoyable evening was spent, and the Council are greatly pleased at the success attained at this, the best attended dinner which has yet taken place.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

To the Editor of the "British Journal of Dental Science.

DEAR SIR,—I think the majority of qualified Dental Practitioners will agree with me, that it is time immediate action should be taken by Act of Parliament or otherwise, to amend the Dental Act as it now stands.

Of course it is obvious that it is unfair after professional men have endeavoured to keep up the standard of the profession, and also for the benefit of their patients by qualifying themselves, which of course means much study and loss of time, that others who are simply registered are allowed to advertise in every disgraceful form to attract the notice of the Public. The latter, I regret to think, trouble themselves very little at the present day about qualifications, if they see cheap and misleading advertisements.

Every dentist on the register who, either from pecuniary interests or otherwise, does not pass the proper examinations of his ability to practise so wisely enacted, should at least be under the same rule as the licentiate, that is, he should be prevented from advertising even his name and address.

Yours faithfully,

E. A. LAURANCE, L.D.S.

Montpelier View ,3, Spa Place, Cheltenham.

January 6. 1893.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
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ANÆSTHETICS.*

By Percy Edgelow, M.R.C.S., L.R.C.P.

Lecture I.

Gentlemen,—The course of lectures which we commence to-day has for its subject, Anæsthesia, the history and scientific study of its induction by various agents, and the methods employed.

Anæsthesia, from *a*, privative and *aisthesis* sensation, is a word used to express a loss of sensibility to external impressions, which may involve a part, or the whole surface of the body.

I wish at this early stage of our course to express my regret that deliberate instruction and examination in the use of anæsthetics, and in their physiological action, is not more insisted upon as an important ingredient in the composite study of the Medical Student. It is a fact that a large proportion of medical men have never witnessed a case of nitrous oxide narcosis, and that a great number who do administer gas, chloroform, or ether are unacquainted with the interpretation of their physiological action. The profound alteration in the functions of different organs of the body during anæsthesia, their complete suspension in many cases and the state at times bordering upon a general arrest of the vital forces, surely demand from each and all of us who may be called upon to plunge our fellow being into this condition, a knowledge of the workings of the powerful agents employed, a thorough acquaintance with the most practical methods of exhibiting them, and what I may term a vital appreciation of the state of insensibility produced, so that we may be ever on our guard against any deceptive and premature appearance of unconsciousness on the one hand, or any threatening transition from a solely anæsthetic to a lethal state on the other.

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* Abstracts of Lectures delivered at the National Dental Hospital, during the Winter Session, 1892-1893.

I will, therefore, ask for your undivided attention to the matter that I shall place before you, enabling the students of the National Dental Hospital at any rate, to lay their claim to a fairly intimate acquaintance with the subject of anæsthesia.

From a very early period, men have endeavoured to relieve pain by various substances. Dioscorides, Pliny and Apuleius all allude to the power of Mandragora to assuage pain.

Herodotus speaks of the inhalation of fumes of the fruit of certain trees, when burnt, which was practised by the ancients.

Areteus, and Caelius Aurelianus speak of the habit of inducing intoxication which existed amongst the ancients by eating Mandragora. At a later date the fumes of heated Indian hemp were used to mitigate the pain of a surgical operation. In the 13th century we find Theodoric alluding to the use of a sponge impregnated with various narcotics for inducing sleep for purposes of operations.

In the 16th century compression of the Carotids was practiced by Valverdi and others.

In the latter end of the last century, Dr. Moore advocated the compression of the large nerves, and John Hunter amputated a leg at St. George's Hospital, whilst the crural and sciatic nerves were compressed. A few years later, Pearson, Beddoes, and Faraday experimented with ether, which they found of use in allaying irritation in affections of the lung and air passages.

In 1799, Davy conducted a vast number of experiments with Nitrous Oxide gas on animals, principally rabbits, cats, guinea-pigs, mice and birds, and subsequently on himself and a number of friends, the results of which he very carefully records in his Researches on Nitrous Oxide. From his writings he appears to have been aware of its anæsthetic properties.

The first deliberate operation undertaken whilst the patient was under the influence of N_2O occurred on Dec. 11th, 1844, in the practice of Dr. Horace Wells, of Hartford, Connecticut. Dr. Riggs, who operated, gives an interesting account of the proceeding.

The next year it was administered unsuccessfully at a demonstration in the Boston School of Medicine, and fell into disrepute, and was not again brought forward prominently until the year 1863, when Dr. Colton energetically pressed its claims in America. In 1867 when visiting Paris, he brought with him a record of 20,000 cases without an accident. Dr. Evans initiated its use in England in March, 1868, exhibiting it at the Dental Hospital of London. From that date its use has rapidly increased until the present time, when we find its daily administrations to be reckoned by hundreds.

In 1845, the year following Well's exhibition, sulphuric ether was first used to relieve the pain of an operation, by a Boston dentist, Morton by name. Its success in larger operations was soon demonstrated, and we find the first instance of its use in England in the dental practice of Mr. Robertson, of Gower Street.

The attention of Dr. John Snow was soon rivetted o ether, and his mastery of the subject was evidenced in the pages of his first published work. Thirteen months after the introduction of ether for procuring insensibility to pain, chloroform undiluted makes its appearance, its birth being due to Sir James Simpson's somewhat unsatisfactory experience of ether in midwifery practice. As chloric ether, a solution of chloroform in spirits of wine, it had been used both as a medicine and for inhalation for some few years previously, but the merit of using it in a pure state belongs to Simpson, who advocated its use in a pamphlet published on November 15th, 1847. It attracted much notice, and soon bid fair to eclipse its predecessor. Within two and a half months, viz., on January 28th, 1848, a death occurred from chloroform, at Newcastle, and this was shortly followed by several others in various parts of the world. These deaths led to a reaction in favour of ether, which again took the field till 1861, when owing to the powerful advocacy of Joseph Lister, the use of chloroform received a fresh impetus. In 1864, the Royal Medico-Chirurgical Society appointed a committee to investigate the uses and effects of chloroform, and the best way of administering it, and many important rules for guidance during its exhibition were laid down.

Paul Bert, Claude Bernard, in France; Snow, Clover, and Richardson, in England, are all greatly identified with the scientific investigation of anæsthesia, and the practical use of the agents employed.

The foregoing, gentleman, is a very cursory review of the historical events connected with the introduction into general use of our three most important anæsthetic agents: nitrous oxide gas, ether, and chloroform.

In concluding this, the introductory stage to our more careful consideration of the science of anæsthesia, and the art of inducing it, let us acknowledge with gratitude all the honour which is undoubtedly due to America as the pioneer of modern anæsthetics.

I now purpose considering in more detail both the anæsthetic state, and the different agents in use for procuring insensibility, commencing with the one which you, as prospective dental surgeons, will no doubt most frequently make use of, viz., nitrous oxide gas. We will study:—

First:—Its physical properties and mode of preparation.

Secondly:—Its administration, including the various apparatus used, and

Thirdly:—Its effects on the body.

Nitrous oxide gas is a chemical compound of nitrogen and oxygen, two vols. of nitrogen and one vol. of oxygen combining to form 2 vols. of nitrous oxide.

When pure it is colourless and inodorous, with a somewhat sweetish taste. It supports combustion as you will observe on my plunging this glowing ember into a stream of it, and the ember burns with a brighter flame then it did in the air. Cold water will dissolve rather more than its own volume of the gas, whilst hot water will dissolve not much more than half its volume. With a pressure of 50 atmospheres at 45°F. it can be condensed into a clear, transparent liquid, and if this liquid be cooled below—115° it solidifies into a transparent mass. The exceedingly low temperature of—140° C. is obtainable by the rapid evaporation of the liquid nitrous oxide in a vacuum.

It is prepared from granulated Nitrate of Ammonia, by gradually heating the salt in a retort. The salt melts at 226°F. and boils at 460°F. giving off gas.

The decomposition is as follows:—

$$NH_4 NO_3 = N_2O + 2 H_2O.$$

This apparatus, kindly lent me by Messrs. Ash for the purpose of practically acquainting you with the method of preparing the gas, consists of the following parts. (Here, the different parts of the apparatus, and the method of working it, were explained.)

I advise you always to start with chemically pure nitrate of ammonia, as it is essential to the safe and comfortable inhalation of the gas that it should be absolutely pure.

Test the salt as follows :—

Place a pinch of the nitrate in a little distilled water in a test tube. Now add a crystal or two of nitrate of silver. If there be no alteration in the clearness of the solution, you may be satisfied of the absence of any chlorine, a very deleterious element. Now to a similar solution of the nitrate of ammonia, add a few drops of a solution of chloride of barium, six grains to the drachm. Should a white cloud appear, carbonates, or sulphates are present.

From one pound of the granulated salt, from twenty to twenty-five gallons of gas may be obtained.

The regulation of the temperature is very important. It must be gradually raised to 226° F. to melt the salt, and then to 460° F. or a few degrees higher, but not higher than 480° F. otherwise, other compounds of N and O will come over, and one of them, nitric oxide, is a dangerous impurity.

If the temperature on the other hand be not kept up to 460° F. the salt will sublime over.

For portability, it is stored in strong iron or steel bottles, the sides of which sustain a pressure of several hundred pounds to the square inch. In order to force the gas into the bottles a very powerful pump is used, which condenses the gas into a clear liquid. Much heat is evolved during the process.

Fifty gallons of the liquid, or condensed gas, weigh fifteen ounces.

When the bottles have been filled, and the aperture at the neck screwed up, unless the screw fits properly, a continual, though perhaps quiet escape is going on. In order to test it, apply a thin film of saliva with the finger on the aperture, when if gas is escaping, this film will bubble outwards. The bottles should be kept in a cool place, as heat increases the pressure.

THE TEETH OF PAUPER CHILDREN.

By RICHARD DENISON PEDLEY, F.R.C.S., L.D.S.,
Dental Surgeon to the Evelina Hospital for Sick Children,
Southwark.

I propose to place before the readers of *The British Journal of Dental Science*, a few facts concerning the Pauper children of London, (of whom so little is known), with some of the results of a recent investigation into the condition of their teeth.

There are some 10,000 children in our Metropolitan and District Schools. The schools, 18 in number, are for the most part situated in the suburbs of London, surrounded by extensive grounds, where the children have all the advantages of good air and healthy exercise.

The children, who are gathered from the various parishes, range from three years to sixteen years; they are clothed, housed, fed, and educated, at the public expense. In connection with each school is a large staff of teachers, with band and drilling masters, and the children are all under medical supervision. There are workshops, gymnasia, swimming baths, band-rooms, and laundries. In some schools, museums and libraries are to be found. In others, a Post Office Savings

Bank has been opened to encourage the children in thrift.

Cricket and football for the boys, and Swedish and musical drill for the girls, are the favourite out-door amusements.

There is a training ship, H.M.S. "Exmouth," off Gray's, Essex, with a certified accommodation of 600, into which boys are drafted for the Navy.

The boys in the schools are taught various trades; many enter the Army and Navy. The girls are trained for domestic service.

During the year 1891, of the 735 boys placed out, 72 entered the Royal Navy, 77 entered the Mercantile Marine, 144 entered the Army and Navy bands, 44 were placed out as shoemakers, 64 as bakers, 33 as tailors, &c., &c. Of the girls 469 were placed out; 458 entered domestic service, and the demand is greater than the supply.

While speaking of the Army, I am reminded of the fact that according to the last Report of the Army Medical Department for 1890, (published 1892), five hundred and six recruits were rejected on account of "Loss or decay of many teeth," and although the rejections are not by any means so numerous as from other diseases, yet this is an interesting fact, and points to the prevalence of bad teeth among the working classes.

The Managers of these schools stand *in loco parentis*, and are, for the most part, intelligent bodies of men, anxious to do their duty, to train the minds and bodies of the children in order that these may be fairly started in life, and become intelligent and *independent* citizens of this vast empire.

To give any idea as to the expenses in connection with the schools is difficult, but, taking four large schools at random, containing 600 to 1,000 children, the expenditure for one year exceeds respectively the sums of £30,000, £20,000, £15,000, £22,000.

During the past 18 months, with a colleague, I have sought and obtained permission to examine the mouths of the children in three schools, viz. :—Southall, Hanwell, and Sutton. Valuable statistics have been obtained which have been permanently recorded in the books of the British Dental Association for future use. 3145 children were carefully examined, and, as the condition of every tooth in each child's mouth was recorded, the investigation deals with something like 70,000 teeth.

The managers of the schools asked that a brief report should be presented to them, so a special printed report was sent in as each school was examined.

It is proposed to give, briefly, an account of the results of the examination, as follows :—

A. Table showing figures bearing upon those points which are of the greatest importance. (See next page).

B. A few remarks based upon table A.

C. General observations and suggestions as to remedial measures considered necessary.

B.—REMARKS.

1. With regard to the *Temporary Dentition.*—It is popularly believed that these teeth are not deserving of any particular attention, as in the natural course of events they must disappear, to give place to others of the permanent set. Whilst there may be some ground for this view, it is nevertheless true that much misery to children, as well as detriment to health, is avoided by intelligent watching and treating of temporary teeth. And when we recollect how rapid is the growth of the body during the first 6 years of life it is obvious that sound teeth capable of proper mastication of food are as essential then as at any other period of a child's existence. It is therefore desirable to call attention to the fact that 3,360 temporary teeth required stopping; whilst 1,954 or the remains of them, either from being too badly decayed, or from being unduly retained (to the detriment o

Age	Number	Temporary Teeth requiring		Permanent Teeth requiring		Temporary	Permanent	Unsound Teeth.	Sound Dentition
		Filling	Extracting	Filling	Extracting	Total	Total		
3	37	57	...	...	...	57	...	57	20
4	110	290	5	...	...	295	...	295	41
5	160	411	35	18	...	446	18	464	44
6	222	561	114	57	...	675	57	732	27
7	282	633	202	175	...	835	175	1010	41
8	201	366	221	163	2	587	165	752	28
9	340	468	302	365	8	770	373	1143	46
10	423	401	313	420	58	714	478	1192	77
11	379	163	252	405	90	415	495	910	95
12	393	10	291	433	243	301	676	977	112
13	314	...	140	333	178	140	511	651	107
14	185	...	58	253	194	58	447	505	45
15	85	...	16	121	87	16	208	224	20
16	11	..	5	29	11	5	40	45	2
17	3	..	...	5	1	...	6	6	2
	3145	3300	1954	2777	872	5314	3619	8963	707

their successors) beyond the normal period, required removal. The total number of temporary teeth needing attention was 5,314.

2. *Permanent Dentition.*—Between 6 and 7 years of age the first teeth of the permanent set may be expected to make their appearance. From their presence in the mouth along with the temporary teeth, they are, unfortunately, too often regarded as belonging to the first set, and thus their decay, and loss, are ignored, to the great injury of a complete dentition. It should be borne in mind that instead of being the last teeth of the temporary set, the 6 year old-molars are the first of the permanent set, most important teeth, not only for size and masticating functions, but also on account of the position they hold in the jaws, and in the series of teeth making up a full set. It is worth while, then, to pay the greatest attention to these individual teeth. After the eruption of the first permanent molars the temporary teeth are gradually replaced by the corresponding members of the permanent set, and at 12 years, and not until then, the second permanent molars may be expected. It is, therefore, important that at all events up to that age or period, the 6-year-old molars should be kept in good working order, as presenting the only constant masticating surfaces during the change which is taking place between the temporary and permanent teeth.

Referring to the table, it will be seen that between the ages of six and twelve, inclusive, there are 2,018 permanent teeth which can and should be saved, whilst 401 require extraction. By far the greatest number of these are 6-year-old (or first permanent) molars.

3. Under the heading *Sound Dentitions* are enumerated those cases in which there was an absence of diseased teeth. Many of these were passing through the transition period between the first and second dentitions.

Some children required merely the easy extraction of temporary teeth to place them in a satisfactory state, but it is nevertheless a fact which merits careful consideration that out of 3145 children's mouths inspected, there were only 707 which required neither fillings nor extractions. Even this number 707 would have been much less, had not 148 children between the ages of 9 and 17 in one school had 256 permanent teeth removed by the Medical Officer. This treatment was beneficial under the circumstances; but had these teeth been carefully stopped in the early stages of decay, extraction in nearly every case would have been unnecessary.

C.—GENERAL OBSERVATIONS AND SUGGESTIONS.

There is an increasing recognition of the importance of a systematic care of the teeth, apart from æsthetic consideration. In the case of children, who, during the growth of the body, have not merely to maintain nutrition, it is surely a matter of urgency that all the organs of digestion should be kept in a state of functional integrity, and if, as seems to be the case, disease of the digestive tract is increasing, it is evident that any departure from the normal dentition places the child, and the future adult, at a disadvantage. Instead of waiting until a child suffers pain, and thus directs attention to a decayed tooth, it is far better for both patient and operator, that the earliest appearance of caries should be noted, and the progress prevented by a regulated system of inspection and prompt treatment. Under such circumstances, dental disease and the necessity for painful operations, become reduced to a minimum, and at the same time, the function of mastication is retained in accordance with what is now recognized as the most beneficial practice. Referring once again to the figures, it will be seen that 2,438 children have among them 8,963 unsound teeth, 2,777 of which are permanent teeth, requiring filling. Taking these facts into consideration, I have no hesitation in stating that a duly qualified Dental Surgeon should be appointed to every School.

Dentists have been appointed to three or four schools—and although in each case the salary given is too small for efficient work to be done on a large number of children—such appointments are gratifying. Before very long, all bodies charged with the care and welfare of children, will recognize the benefit of skilled attention being paid to the teeth, but at present it is a lamentable fact that the vast majority of the children in pauper schools in the Metropolis and throughout the country, have no dental supervision at all.

It is easy to see how this tells on one class alone. 458 girls entered domestic service from Pauper schools of the Metropolis last year. Five-sixths of this number had never even known the use of a tooth-brush. The troubles of a domestic servant suffering from neglected teeth, need but little imagination to picture; but disordered digestion, irritability of temper, and inability to perform the allotted duties are some of the most obvious results.

How to deal with the teeth of children in this and other departments of the State is a difficult question; but it is one which will to some extent be solved when our Legislators, School Board Managers, and Poor Law Guardians recognize more clearly the fact that one of the most essential parts of a child's education is a knowledge of its own body, and how to treat it well. The tooth-brush drill is as needful as any other gymnastic exercise, and for success in life, "to be a good animal" is the first requisite.

For energy is of far more importance than information.

(*Vide* Spencer on Education.)

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TAKING IMPRESSIONS OF THE MOUTH.*

By Mr. W. S. FRANCE.

Mr. President and Gentlemen,—The subject which I am about to bring before you to-night is one which, on account of its apparent simplicity, is very much apt to be overlooked in many of its details.

Before taking an impression of the mouth it is necessary that all tissues which come in contact with the base-plate should be in a healthy condition. All diseased roots and teeth which will not yield to treatment should be removed, and astringent and antiseptic remedies, if necessary, should be used to restore the mouth to its normal state.

When artificial teeth are to be inserted in a case in which some of the natural teeth remain, and are in a healthy condition, it is necessary to have some definite rules as to the teeth which should be retained in the mouth. The best rules that can be given for extraction or retention of the teeth under these circumstances are based on their liability to decay and the obstacles to retaining artificial substitutes.

As regards full dentures, upper ones are retained more securely than lower, and as regards partial dentures, those replacing the upper six front teeth and lower molars and bicuspids are the most satisfactory. The preservation of the lower teeth is more desirable than that of the upper, and the retention of the lower front teeth is the most important.

When teeth are extracted, from six to fifteen months should be allowed for healing and absorption before taking the impression. It is desirable in all full cases, and in partial cases of more than six teeth, that temporary sets should be worn, so as to prevent change in the muscles and other tissues which give to the face its characteristic expression, which when once lost is very difficult, and sometimes impossible, to restore.

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* Read at the Students' Society of the Liverpool Dental Hospital.

Assuming that the mouth is in a proper condition for an artificial denture, the next step is to observe the hardness and softness of the palate. In partial cases it is necessary to note the shape and inclination of the remaining teeth. Of the points to be noticed in an examination of the mouth the hardness and softness of the ridge and palate are the most important; the ridge may be hard and the palate soft, or the reverse may be the case; the latter condition is the most troublesome of all. An irregular hardness and softness of the ridge sometimes occurs and complicates the difficulties of the case. The soft parts of the hard palate occupy its posterior third, extending from the median line to about midway down the alveolar ridge. The hardest parts are found in the centre of the hard palate. The inferior alveolar ridge is generally uniformly hard until considerable absorption has taken place.

In order to determine what should be accomplished by the impression, it will be necessary to touch briefly on the forces which retain and detach artificial plates. Absolute contact and uniform pressure produce the most perfect adhesion of an upper plate, but as a plate under atmospheric pressure sinks more or less into the tissues, it should be so constructed that at first it rests lightly on the palate and bears more heavily on the alveolar ridge. A denture is detached when there is sufficient movement to admit air at any point around the margins of the plate. Movement of the plate under comparatively light pressure applied to the sides, or in front, generally implies yielding of the surface against which it rests, and this yielding is caused either by the relative softness of the ridge, or hardness of the palate. Absolute contact is secured by a good impression taken in the ordinary manner, but uniformity of pressure must be attained by other means.

In cases where the parts are uniformly soft, a perfect impression, with a shallow vacuum cavity on the centre of the palate, is all that is required to secure the best adaptation of an upper plate. The best adhesion does not generally result from an impression of the parts as they are, but requires in addition compression of the soft tissues. The soft parts are compressed either directly by the impression, or indirectly by scraping the model where the soft parts lie.

The essential properties of an impression material are the following. It must take a sharp imprint, must harden promptly, and when there are undercut, or dove-tailed spaces, it must either bend, or break with moderate force. The material must be soft enough to copy the finest lines of the mucous membrane, and at the same time must have the consistency which will not displace the soft tissues.

The impression materials are :—wax, gutta-percha, modelling compound, and plaster of Paris. The two latter having the most desirable qualities are most extensively used. Wax has most of the essential qualities, and though it can be made plastic enough for many cases, it stretches and displaces the soft parts. Gutta-percha is still used to a limited extent, but it has too much contraction to be reliable as an impression material. Modelling compound is the latest, and, in some respects, one of the best materials for taking many partial and full lower impressions. Plaster of Paris possesses the most essential properties for impressions, as it will not displace or stretch the soft parts of the mouth, and if introduced into the mouth in a proper consistency, its compression of the soft parts is infinitesimal, so that it gives the correct impression. The plaster is mixed rapidly in a small bowl with warm water, and a little salt to hasten the setting ; the bowl is jarred on the bench to get rid of air-bubbles before pouring into the impression tray. Many objections have been made against plaster, but they arise from using it improperly. The too common plan of taking a tray that will simply enclose the ridge, paying no attention to the height of the palate, and piling the plaster high in the centre, is a good way to choke the patient, and spoil the impression. Mixing it so thin that it will drop on the patient's clothing, or so thick that the parts cannot be imbedded, or using such a quantity that there is too much overflow, are mistakes that are certain to cause failure.

The best method of taking a plaster impression, is first of all to take an impression in wax or modelling compound. Then remove a layer to give room for the plaster, with a line left intact across the back of the tray to limit the flow. The advantages of a wax palate are as follows :—It measures the height of the palate and enables the operator to estimate the proper quantity of plaster. It makes the taking of the impression a certainty, with the least risk of the plaster being pressed against the soft palate ; it aids in adjusting the cup, which should always be done with the second finger in the centre ; and, besides these advantages, the wax palate, when softened, enables the impression and the model to be easily separated. After preparing the cup, certain directions must be given to the patient. The patient should be directed to avoid swallowing while the tray is in the mouth. As soon as the tray is introduced, request the patient to lean the body and head forward, and when the tray is in position, draw down the lips. Pressure with the fingers may be made at the front of the mouth. Never attempt to remove an impression until the plaster will fracture without crushing. When the cup is properly shaped, place the plaster around its floor making it shallow on the palate, high at the corners, but highest in front. While the plaster is setting, the cup must be held perfectly steady, the least movement being liable to damage the impression. An impression usually hardens in two or three minutes, but it must not be left in so long that by absorbing all the moisture it will adhere to the mucous membrane. Many impressions will adhere so much that they will sometimes resist even forcible attempts to dislodge them. By raising the lip and cheek at the front and sides, to admit air, and at the same time elevating and depressing the handle of the tray, by short rapid movements, the impression is easily and safely detached. In a case of difficulty, the air may be admitted at the back of the tray by pressing up the soft palate with the blunt end of an instrument, or the patient may be directed to give a slight cough, which, by raising the soft palate, admits air under the impression. This simple and efficient method of taking plaster impressions, needs only to be tested to be adopted, and there will be no occasion to use cups with moveable palates, to anchor the plaster, nor will it be necessary to make dies and swage cups for special cases.

THE PECUNIARY VALUE OF INCISORS.—In a recent County Court case, a coal miner sued an engineman for the sum of £10 as damages for an assault, when, it was alleged, the defendant knocked out two of the miner's front teeth. A defence of provocation was raised, but His Honour said that did not justify the blow, and entered judgment for £2 10s. Our report does not throw any light upon the condition of these incisors at the time of their departure, so we are left to wonder whether expert evidence was called to show they were attacked by pyorrhœa, or that their prospect of future usefulness was limited by advanced caries. It is perhaps possible that the plaintiff had had the incisors artificially represented, and that the amount awarded was the dentist's fee? Was replantation offered a fair trial? There appears to be all the elements for a good cross-examination, and we regret that a meagre report obliges us to be content with simply recording the verdict!

British Journal of Dental Science.

LONDON, FEB. 1st, 1893.

SCHOOL CHILDREN'S TEETH.

Among the Original Communications which are published in the present issue will be found a statement of some facts with regard to the teeth of certain School Children, and we recommend a careful study of Mr. Denison Pedley's paper to our readers, many of whom have doubtless noted the references to the general subject of children's teeth, now becoming so frequent. The matter is one of growing importance and is destined before long to be still more commented upon. We are all aware of the good results which must accrue if early attention is paid to children's teeth, and the paper in question does not put the case too strongly. Mr. Pedley is one of a band of workers who, commencing with Mr. Fisher, of Dundee, have within the last few years put on record the tabulated results of a series of careful investigations based upon an actual inspection and examination of children's mouths. That such a systematic aggregation of statistics would furnish results interesting from a scientific and professional aspect must be apparent; but there is also a public point of view from which the figures themselves must be regarded, and it is for this reason that we now draw attention to the subject. Mr. Pedley's statement of facts is apparently plainly worded, without many technical terms; and apart from the many strictly detailed points of interest to be evoked from such an extensive and comprehensive examination, we find in this table much matter for serious reflection. The danger of building up statistics insufficient numbers is of course to be remembered, but in this case such an objection does not seem valid. Further, it appears reasonable to think that the difference between pauper children and those in Board Schools is not so great as to prevent deductions being drawn as to what may be expected should these latter ever come under supervision. Indeed there would seem reason to believe that the higher we go in the social scale the worse is the dental condition unless proper treatment is provided.

Those interested in such matters may no doubt be induced to make other calculations than are alluded to in the observations upon the table of figures. For ourselves, we should be disposed to lay especial stress upon the column recording the number of unsound permanent teeth, and we have taken the opportunity of noting the ratio of such, per hundred children at various ages. Thus in every hundred children at the age of six years we may expect to find that there are twenty-five permanent teeth unsound, and, at this early age, requiring filling. As the age rises the ratio increases until at fourteen it reaches 241, at which period a large number are condemned for extraction. It is difficult to describe in terms what such a state of things really means, but we believe that when once the public understand it, the remedy, which is at hand, will be demanded. We hope that such of our subscribers as have the opportunity will take care that these statistics are brought under the notice of Boards of Guardians and other public officials. The difficulty of educating the ordinary public on professional matters is only slowly disappearing, although it is true that a more intelligent view is being taken of dental requirements. The natural and gradual elimination of doubtful practitioners is being accompanied by the evolution of one whose word will be more readily accepted with credence when it is disassociated from the ordinary trammels of commerce and regarded as the disinterested expression of opinion, conscientiously given by a scientifically-trained professional man.

One of the most important points in the future will be with regard to the appointment of dental surgeons to schools. Hitherto, the reports, when furnished in connection with such posts, have generally consisted of a ghastly return of the number of teeth extracted. We feel very strongly that when the *proper* treatment is carried out, there will be no danger of opposition on the part of medical officers, which is occasionally hinted at. They will be the first to recognise, when ruthless extraction is shown to be not the sole, nor indeed the proper method of treatment, that the advent of a dentist is to be welcomed. We are prepared to endorse Mr. Fisher's remarks :—"Whatever may be the class of dental appointments in the future, I would have them all well remunerated, according to the amount and value of the service rendered, so that no operator might refrain from the faithful performance of his duty, which will bestow the benefits of our education on humanity at large." A good equipment should be provided, and an accurate record kept of all operations performed. All the children in the school should pass through the dentist's hands twice during the year ; and a monthly summary, and an annual report should be submitted to the school authorities. In order to promote such a consummation, it may be thought necessary, later, to approach the Local Government Board, not merely to support the hands of Guardians who may be willing to make such appointments, but also in order that such Boards as have taken no action, may be advised as to the necessity of doing so. Finally, we hope before long to hear of an Association of School Dentists who may thus be enabled to keep in touch with, and take advice from, one another.

Liverpool Dental Hospital.—The Annual Meeting of the subscribers to this Institution was held on the 12th inst. under the presidency of the Mayor. From the report read by the honorary secretary it appears that 16,000 patients have had over 20,000 operations performed during the past year. As work is carried on during the evening, the committee have resolved to introduce the electric light, and it is hoped that the public, by increased subscriptions to meet the additional expense, will show their approval of the good work thus carried on. The treasurer's financial statement shows a small balance on the wrong side, and we are sorry to gather from the Mayor's remarks that the Hospital Sunday fund collection, recently made, was not up to the usual standard, and the Dental Hospital share will therefore not amount to so much as that of last year. Promise of additional help was, however, forthcoming at the meeting, and the speeches made indicate that the Institution will continue to flourish.

THE CONJOINT MEDICAL EXAMINATIONS.—Dental Students, and others interested in the acquirement of English medical diplomas, will find food for thought by perusing the report of the Committee of Management of the two Royal Colleges. The result of the examinations for the past year was as follows :—

1. Under the regulations, dated October 1st, 1884, four years' curriculum.

For the first examination in chemistry 664 candidates presented themselves, the percentage of rejections being 34 ; in Materia Medica 847, rejected 43 per cent. ; Elementary Anatomy 813, rejected 20 per cent. ; Elementary Physiology 763, rejected 14 per cent.

For the second examination : In Anatomy 819, rejected 35 per cent. ; in Physiology 924, rejected 45 per cent.

For the final : In Medicine 797, rejected 35 per cent.; in Surgery 816, rejected 40 per cent.; in Midwifery 783, rejected 33 per cent.

2. Under the regulations dated Jan. 1st, 1892, five years' curriculum.

First examination : In Chemistry 51, rejected 41 per cent.; in Practical Pharmacy 29, rejected 31 per cent. ; in Elementary Biology I0, rejected 20 per cent.

MIGRAINE.—Dr. Leonard Guthrie, in some interesting notes upon this distressing condition, points out that although it may sometimes be a pure neurosis or "nerve-storm," yet in most cases, the wind is raised by the stomach and digestive organs. The author quotes Dr. Lauder Brunton as having shown that many headaches are due to dental caries, and himself narrates a case in which a girl of thirteen has been under observation for a year and a half. For twelve months previously she had weekly migraine, monthly epilepsy, and more or less constant tetany of both hands and feet. She had bad digestion and bad teeth. The teeth were stopped; diet and exercise were regulated, and the patient had only one more fit within a month, and none since. The tetany and headaches gradually disappeared, and for many months she has appeared in perfect health.

ANTISEPTICS.—There would appear to be some hope still left for our old-fashioned, but somewhat neglected, friend, Carbolic Acid. Doubtless, some practitioners have continued to use it, in spite of the inducement to try new germicides, due to the strong praise given to corrosive sublimate and other drugs. At all events, so far as surgical dressings are concerned, carbolic acid is likely to receive renewed attention on account of the reference made, as to its utility, by Sir Joseph Lister, in a recent post-graduate lecture at King's College Hospital. It was stated that, relying upon healthy blood-serum and the action of phagocytes, the surgeon might practically disregard the ordinary microbes of air-dust, and confine his attention to the grosser forms found on dirty sponges, instruments, and skin. Sir Joseph Lister expressed the opinion that Prof. Koch—able as he was—had been misled, and exaggerated the germicidal powers of corrosive sublimate. This corroborates one of the conclusions drawn in an American communication upon the subject, an abstract of which was published in our last issue. The lecturer recommended the use of gauze, steeped in a solution of carbolic acid of 1 to 20. This should afterwards be dusted over uniformly with cyanide of mercury and zinc.

A MISPLACED CANINE.—Dr. Walker Downie has communicated to the Medico-Chirurgical Society of Glasgow, the details of a case of chronic suppuration in the antrum of a little girl, aged six years. Regular poulticing under the direction of a "bone-setter" had been carried on for six months. The right eye was partially closed, and the nose pushed over to the left. There was a foul-smelling, purulent discharge from the right nostril, and extensive ulceration of mucous membrane of the mouth, immediately about the canine tooth. A probe demonstrated necrosed bone over a considerable area, and under chloroform, the right lateral and canine (both carious) were removed, and afterwards, the anterior wall of the antrum. Much pus escaped, and when the cavity had been washed out, a hard body was felt at the upper and anterior portion of the cavity, firmly attached to the wall, but projecting from it. On removal, it was recognised as a permanent canine tooth, with the crown large and fully developed, and the fang in a forward condition. We agree with the remark, that it is difficult to account for the position of the tooth, but the unusual development would prepare one for eccentric behaviour on the part of such a precocious canine, which, normally, should have made its appearance some six years later.

ORGANISATION AMONG DENTISTS.—Under this heading some paragraphs have been circulating in certain newspapers. We are not aware who is responsible for the inspiration, and, in the absence of such knowledge, it is difficult to speculate as to motives. The objection manifested to the present state of things is definitely attributed to "some of the younger practitioners." We have, personally, not met with such, and so far as we can at present form an opinion, the youngest practitioners will be found opposing any attempt to depreciate their standing on the part of some of the older and dissatisfied men, who after fifteen years think they might fare better with a College of Dentists. Perhaps the meeting which, we understand, is to be held at Sheffield, will throw some light on the subject.

Review.

Methods of Filling Teeth, by Rodrigues Ottolengui, M.D.S.
Philadelphia : The S. S. White Dental Manufacturing
Co., London : Claudius Ash & Sons, Limited, 1892.

This is a good book which will be read with interest, and its two hundred and thirty six illustrations will repay study. Although no claim is made that the lines of treatment adopted are original, yet the work might perhaps be accurately described as " Ottolengui's methods of Filling Teeth,'' for it is an account of the author's own practice, expressed with an entire freedom of thought as to what may be regarded by others as the best methods in certain cases. Theorists, *id est* those holding different views from the author, meet with a short shrift. Separators, matrices, and non-cohesive gold, for instance, are condemned with an equanimity which inspires an interest for the reader of ordinary text-books in which the regulation facts are marshalled in due order.

Making allowance for the seeming egotism which, under the circumstances, necessarily pervades the book, we can heartily recommend students and dentists to personally test the sub-title :—" An Exposition of Practical Methods which will enable the Student and Practitioner of Dentistry successfully to prepare and fill all cavities in Human Teeth."

Abstracts of British & Foreign Journals.

THE CONDITION OF THE DENTINE IN PULPLESS TEETH.

By Dr. W. C. Barrett.

The dentine deriving its nutriment from the pulp through the dentinal fibrillæ, is separated from all the other tissues of the body through investment by the cementum and the enamel. The latter tissue is not only devoid of living matter, but it is not in direct relation with any tissues save the dentine itself. For our present purposes the enamel may be looked upon as a simple protecting cap, whose office it is to preserve the dentine and pulp from injury.

The cementum is of a different character. It is but slightly differentiated from true bone. It is in relation with a periosteal membrane, and it is nourished like bone, through a system of lacunal corpuscles, connected by canaliculi.

In young teeth it is not infrequently the case that there is even a kind of Haversian canal traversing the cementum and dentine between the pericementum and pulp, whose office it is to assist in maintaining the vascular supply, and incidentally, perhaps, to afford nutriment to the deeper cementum corpuscles.

The dentine is yet more differentiated, and in its structure has lost the lacunal corpuscles, while the canaliculi are modified into the dentinal fibrillæ. Their office is not materially changed, nor are we to suppose that the contents of the dentinal tubuli differ very widely from the canaliculi of true bone. They form the living portion of the dentine, as the lacunal corpuscles and the canaliculi form that of true bone. The dentinal fibrillæ are in connection with the vascular pulp, and from it derive the nutriment necessary to their continued life. The corpuscles found in true bone and in cementum are absent, and hence there is little that bears a resemblance to that concentric texture of true bone which forms its lamellated structure. At the extremities of the dentinal fibrillæ we have the irregular inter-tissual spaces which mark the boundary line between dentine and cementum, and which may perhaps be considered as modifications of the cementum corpuscles, but they are not intimately connected with the dentinal structures.

The dentinal fibrillæ, depending as they do upon the vascular pulp for nutrition, certainly lose their protoplasmic vitality when separated from it. Let us consider for a moment the condition of the dentine in a tooth, the pulp of which has, without medication, just been removed. The fibrillæ have been freshly torn from their relations with the pulp, and remain filling the dentinal tubuli as before their violent separation. Like all protoplasmic material, they are composed of the great quaternary of elements which enter into the composition of all organic elementary structures. But the dentinal fibrillæ also contain probably other elements, such as sulphur and phosphorus, which make it more near-the nature of albumen. Indeed, it is probable that if we consider it as clearly albuminous, we shall not do much violence to nature. Carpenter says that this substance is the proper pabulum of the animal tissues generally, and so the dentinal fibrillæ, possibly modified somewhat, may be looked upon as albuminous in their nature.

The dentinal tubules which contain the fibrillæ are exceedingly minute. For the putrefaction of the contents of the tubuli it would be essential that putrefactive organisms should enter them. While it is quite possible that these may penetrate the tubuli, it must be to but a limited extent. Dr. Miller shows that from their minute size and the very small amount of nutriment for the micro-organisms which they contain, any bacteria which enter them must soon perish from want of pabulum, to say nothing of the fact that they are mostly aërobic, and so could not possibly live in the tubuli for any length of time.

But not satisfied with *a priori* reasoning, he commences a rather remarkable series of experiments and observations, from which he incontestably deduces the conclusion that bacteria do not penetrate the tubuli of undecayed dentine to any marked extent,—certainly not enough to cause anynecessity for the disinfection of the dentinal substance, in teeth in which there has been no decay within the pulp-canals. There is no necessity for enlarging upon this. The record is open to the inspection of all, and no one has yet dared to take issue with Dr. Miller upon this point. It must be accepted that in the dentine of the roots of teeth in which decay has made no progress there is no infection of dentine that demands any antiseptic treatment, aside from that usual in pulp-canals.

What, then, becomes of the contents of the dentinal tubuli? It is but necessary to consider their character to form a clear estimate of this. The dentinal fibres cannot be considered as pure albumen, for that is only found in connection with other substances in the body. But whatever its exact composition, it presents certain characteristics, one of which is its tendency when at rest and separated from living tissue, to dissociate the watery portion, and to form a dried residuum which is insoluble. This condition may also be produced by most acids, by the metallic salts, and by creasote.

The natural tendency, then, for an albuminoid fibril would be to assume a mummified condition, most conducive to its indefinite preservation when kept in the state in which it will be found in the dentine of a tooth-root

The author doubts whether there has ever been a case of re-infection of the tissues about a tooth that has had its root filled after antiseptic treatment, that cannot be directly traced to some imperfection in the manipulation, or to some infected pockets outside the tooth itself. It is well known that the usual place for the formation of an infected pocket is at or near the apex, and that there may be a penetration of the micro-organisms and the formation of infected pockets for some distance back in the bone. He himself had seen at least three such, extending back from the point of an incisor tooth until the last one was over the second bicuspid, and each of these separate pockets connected with the original one at the apex of the incisor. They were only reached by a long incision through the gum and external alveolus, extending from one to the other until the last one had been reached. If the infection had been from the dentine, it would have manifested itself quite differently.

Undoubtedly there are cases in which the infected spot is at some point in the pericementum between the gingival margin and the apex of the root. But this does not by any means prove that it came from infective dentine. Perhaps after the apical foramen, the most usual place for the formation of an abscess is at the bifurcation of the roots of a bicuspid or molar. He believed this to be due to the fact mentioned earlier in this paper; that something analogous to a Haversian canal there may penetrate the cementum and dentine, from the pericementum to the pulp. He had demonstrated such many times. Not infrequently an abscess refuses to yield to the usual treatment through the pulp-canal, and for the reason that the medicaments fail to reach the infected point. But such instances cannot be said to be produced by infective dentine.

There is, in truth, another foramen analogous to that at the apex, and it becomes septic in precisely the same manner as does the latter.

In what had been previously urged, he had presupposed that caries has not commenced within the pulp-canal; and yet we are all well aware that in cases in which the pulp had been long dead, and there has been extensive decay of the coronal portion of the tooth, there was caries of the dentine commencing within the pulp-chamber and extending down the canal.

In instances like this, of course, there will be thorough infection of the dentine. It will not, however, be due to decomposition of the contents of the dentinal tubuli, but to infectious matter which may find its way into the hollow from external sources. It would be as manifestly improper to fill such a canal without removing the carious portion, as it would be to fill a cavity from the outside without careful excavation.

Here will be an instance in which the reaming out of the canal to the depth to which caries had penetrated would be eminently proper practice. It is very seldom that this decay will extend far down the root-canal, or be very deep, without such destruction of the crown and cervical portions of the root as to make preservation practically impossible.

The Dental Cosmos.

THE BREATH.

By J. TAFT, D.D.S.

IT is not the intention in this paper to enter into a consideration of the subject of respiration in its physiological features, nor to raise an inquiry as to the normal changes that are accomplished in the process of respiration, but rather to give expression to a few thoughts upon some of the abnormal conditions in which the breath is so frequently found.

There is a great variety of vitiated conditions of the products from the respiratory apparatus; this is a subject of great interest and importance.

Impure breath is liable to occur at any and all periods of life. This is experienced in the variations of health condition. It is found in a great variety of phases—from the slightest perceptible deviation from the normal state to that in which it is loaded with a large amount and great variety of excrementitious matter from various sources, perceived sometimes even by the sense of taste, at least so far as the patient is concerned, but more especially by the olfactories, making such an impression through this channel as to produce nausea, and, indeed, the infection of contageous diseases may be carried from one person to another by the breath. A vitiated breath as a means of conveying the seeds of diseases is not duly appreciated by the public, and perhaps not so fully as it ought to be by the majority of physicians. The various conditions of the breath, when rightly interpreted, in many instances, indicate much in respect to active diseases; undoubtedly this is true in regard to diphtheria, scarlatina, typhoid, and probably some other diseases; and in others of a more or less perverted or vitiated physiological action, which the physician would do well to note and study.

The dentist always suffers more or less discomfort from the offensive breath of his patient; this is especially so, if his sense of smell is very acute, and if the odour from the breath is very marked. This sometimes produces nausea, and sometimes acts depressingly upon the nervous system, these may occur even in the milder forms of fœtid breath.

If the dentist is subjected for a considerable time to this condition of things his general health may become affected in a more or less marked degree, according to his own susceptibility, and to the degree of vitiation of the air he is compelled to inhale. There can hardly be a doubt but what many suffer very greatly from this cause; and though one may not suffer much, or apparently at all in this respect, yet a sense of discomfort or uneasiness is always experienced by the dentist in his professional work when subjected to a vitiated atmosphere, and this will necessarily interfere somewhat with the thoroughness of his operations. It is a serious question whether the dentist ought ever to subject himself to such embarassments, at least, for more than a few minutes at a time. It certainly would be for the welfare and interest of both the patient and the dentist were the former to be put upon proper treatment before having extended operations made.

There are some instances in which this affection seems uncontrollable, but in the great majority of cases it is amenable to proper treatment, and can either be modified, masked or wholly eradicated. It can in many instances be wholly, and by proper care permanently, relieved. In others the change is only of a temporary character, irrespective of any treatment that may be employed.

This affection arises from two general sources, viz.: systemic and local. Each of these classes have quite a variety of causes, and if we properly study this subject, attention must be given to both these varieties. The first class, viz.: systemic, I will not attempt to discuss further than to say that any derangement of the general eliminating processes and channels of the body, or a derangement or diseased condition of any of the eliminating organs is likely to result in a vitiated condition of the breath. Elimination of the waste material of the organization is chiefly through five or six sets of organs; any one or more of these failing in the proper exercise of function is followed either by the derangement of other functions or by the throwing of vicarious work upon other parts. Derangement of the stomach, alimentary tract, kidneys, liver, or skin is almost certain to result in more or less marked change of the breath, from the fact that in part, at least, the waste that thus fails to be removed is thrown into the lungs, and will in many instances, produce a markedly offensive condition of the breath. But in some instances the breath may be contaminated with excrementitious matter that possesses little or no offensive odour. The defective function of the digestive apparatus is, in nearly all cases a source of fœtid breath. Disease of the lungs of almost every variety is attended with more or less vitiation of the breath.

Of the local sources of this difficulty there are many, and of these there may be said to be two classes, the one embracing all the local disorders that may contaminate the breath after it leaves the lungs; this will embrace the various forms of diseases found in the throat, mouth and nose. Diphtheria, scarlet fever, tonsilitis and perhaps some other affections, though affecting the entire sytem, possess a local manifestation that results in greatly vitiated breath.

The various catarrhal affections that are found in the nose, the throat and mouth, in all cases more or less affect the breath, varying very much, it is true, in different cases, ranging all the way from the very mild, almost imperceptible change to an intolerably disgusting degree. This affection should be well studied by the dentist, in order that he may be able to give his patients some, if not permanent relief, and that he may protect himself so far as he may against an intensely annoying and offensive condition.

Disease of the gum and mucous membrane of the jaws are often the occasion of this offensive condition.

Also necrosis, alveolar abscess, and, sometimes decayed teeth.

Another source is found in the presence of foreign matters, as calculus, or accumulation of food.

These three sources of affection may exist in either the [illegible] tor, and with both they should all be [illegible] le. For that arising from the third class of causes, viz : the presence of extraneous substance, there is no apology for it remaining as a source of trouble. In the management of the second class of causes, viz : those arising from local affections of the mouth, throat, or nose, there is little excuse for these remaining as an offence to either the operator or the patient. It is true that some of these diseases are very persistent in their hold upon the tissues or upon the parts in which they are situated ; but the intelligent and well educated dentist will be able, in a great many instances, to suggest treatment that will be of permanent value to the patient, and in some cases result in a permanent cure. But with a large variety of disinfectants, antiseptics, cleansing materials and methods there is no difficulty in rendering almost every such case free from the objectionable condition, for a time at least, sufficient for necessary operations.

A great many formulas have been given for the correction of offensive breath ; the suggestions made for the use of these however, in the majority of cases, are upon a false basis ; with many of them it is only the substitution of one odour for another, or the mixing of two offensive conditions, and producing a third that is, perhaps, temporarily more tolerable than either of the others.

The Dental Register.

EFFECT OF CERTAIN DRUGS UPON THE ORAL CAVITY.

By J. D. PATTERSON, D.D.S., Kansas.

Some years ago, having been closely allied with physicians in the care of stomatitis resulting from mercurial poisoning, I began to doubt that the classic symptoms of ptyalism as found in the mouth were *per se* the result of mercury. My attention was first called to "*the blue line,*" and text-books signally failed to enlighten me as to why it should be present. Inquiry among all classes of medical practitioners developed a wide difference of opinion about the *blue line*, that invariable symptom of salivation. They declared that it was there, that it was always present in salivation, and that was sufficient for them. Now, before I knew anything about mercurial poisoning in the earlier years of my practice, I had seen many "blue lines" around gum-margins as the result of a deposit of calcic matter, which disappeared under dexterous use of a scaler; and I asserted that the blue line was caused by calculus, and was not the result of mercury *per se.* I asked physicians to explain physiologically the presence of this blue line, and the only explanation was from an ignorant practitioner, who asserted that it was caused by the presence of finely divided metallic mercury gathered there from terminal vessels,—a thing utterly impossible, as mercury internally administered cannot reach the gum-tissue in any such form. I then agreed to entirely obliterate in a single operation such blue lines in any patient brought to me, the patients to be chosen from those who were salivated by prolonged administration of mercurials. In this I was successful.

Finding that the "blue line" was a result of local conditions only, I then began to experiment upon the "inflamed and spongy gums" in salivated cases. I solicited cases of this kind, and stipulated to cure them without withdrawing the mercurial doses if the physicians desired still to continue the mercury-giving. The result was perfectly successful. Under careful removal of all irritant matter, and the institution of perfect hygienic and antiseptic conditions, all swelling and ulceration, save that which was clearly syphilitic, in a few days would disappear; this too, as has been stated, without withdrawal or lessening of the dose of mercury. These experiments, which were carried on for about two years, were made possible from the fact that there were accessible a large number of patients suffering from the specific syphilitic taint under care of specialists.

The conclusions then reached, and which have since been verified, were that "the blue line," "the inflamed and spongy gums," and other of the more serious appearances were the result largely of local irritation, and not of the mercury; that, with proper care, these symptoms which have been and are characterized as symptomatic of mercurial poisoning, may be entirely prevented.

The Dental Cosmos.

OPERATIVE DENTISTRY.

By B. F. ARRINGTON, M.D., D.D.S., Ashville, N. C.

The first consideration in the care and preservation of children's teeth should be thorough and systematic cleanliness of the teeth. Inspection on the part of mother or nurse should be frequent. Tooth brushes suitable in size, shape and texture of bristles should be freely used several times daily, and always just before retiring at night so as to free the teeth of any impacted or accumulated substances. The mother or nurse should manipulate the brush as in their judgment may be best until children are old enough to reason on the subject and fully comprehend the importance of the operation. All teeth back of the eye teeth should be carefully brushed on the cutting or grinding surface. With such care, the first set of temporary teeth would be retained with freedom from early and extreme decay and be preserved in a comparative state of comfort until discarded by natural process for the inception of permanent teeth. In the event of perceptible decay, with proper application of appropriate instruments and appliances the defects can be easily and effectually removed and is far better for the teeth and more comfortable to patients of tender years than would be the operation of excavating and filling. If neglected until decay is too far advanced to be removed by means above advised, shape cavities to best advantage possible and fill with gutta-percha, and add to when neccssary, or in large grinding surface cavities in molars or bicuspids, cap gutta-percha with amalgam, and always with an amalgam possessing a large percentage of tin. Cavities in temporary teeth should never be filled with gold, it would be contrary to right, never justifiable, would be a very great injustice to children and parents. To preserve the temporary teeth intact for utility and proper development of maxillaries and space for permanent set of teeth should be the aim of every dentist. Any tooth or teeth to be healthy and preserved in a comparatively normal state, must be freely and regularly used, and sometimes, I might say often, the harder the substance masticated in reason, the better for health of teeth and gums.

Treating decay and filling teeth, I hold that any decay that can be successfully removed without detriment to the pulp, leaving the space smoothly polished and self cleansing, is wiser and better practice than to excavate and fill. Free separations and appropriate conservative treatment of defective surface is less expensive, less hurtful and harmful than filling. Decay around the necks of teeth, buccal and labial can be treated and the teeth better preserved by properly shaping, medicating and dressing, than by filling. I seldom fill that class of decay, having learned from experience long since that the use of chisels, finishing burs, corundum points, direct application of Nitrate of silver, creosote, &c., followed with stick and polishing powders, will accomplish more for the comfort of my patients and preservation of their teeth than excavating burs, excavators and pluggers, with great saving of time and labour to operator, and money to patients. Another very important consideration in favour of this line of practice, is the freedom from glaring exposure of gold as is often seen in mouths, and is always unsightly and often very objectionable, and if possible to be avoided, should never be tolerated in practice. I have examined the condition of teeth treated as above advised six or eight years after treatment, and found them entirely satisfactory; no recurrence of decay and entire freedom from sensation as much so as any portion of crown in a normal state. Could a better result be desired, or obtained by excavating and filling with gold, the most popular material for such cavities, or any other material? I do not only question it, but unhesitatingly assert without fear of contradiction based upon practice and experience, that so good a result could not be obtained. If the decay has advanced so far as to require excavating and filling, the question then arises as to material best suited, all things considered. Under some circumstances, gold is admissible and should be used, but in a large majority of cases, gutta-percha is preferable, it will serve a better purpose than any other material. I have inserted gutta-percha fillings in labial and buccal cavities five and six years ago, and the fillings are now in a good condition and bid fair to give satisfaction for years to come.

When I first commenced the use of gutta-percha in such cavities, I feared the waste from friction in use of brush would be rapid and prove a hindrance to use of the article, or necessitate the operations of frequent adding to, but time and careful observation has convinced me to the contrary. The secret of success in the use of gutta-percha consists in proper introduction and thorough condensation of material from base to surface. Never crowd or stuff a cavity with large pieces and never apply too much heat, better to apply heated instruments to material than material to heat. Every under-cut and irregularity of cavity surface should be considered and worked properly, and special care to condensing at cervical section of cavities, especially in approximal cavities. No metal except cohesive tin can be so condensed into a cavity as to ensure against leakage as a good and reliable gut a-percha.

Amalgams, especially those composed largely of tin, serve a good purpose as a filling material and in a large majority of cavities will prove more durable than gold, and with the majority of persons in need of fillings as entirely satisfactory as gold, and for all classes would be as satisfactory except as to appearance. Those who have through weakness, a fancy for display of gold in or on their teeth, must be accommodated I suppose to some extent, possibly for a decade or so longer.

The growing disposition on the part of operators to display gold in the mouth is an unfavourable and demoralizing feature in practice. Gold is good and commendable as a filling material; it has served a good purpose and the use of it in filling teeth will be continued, and he who manipulates it skilfully and effectively deserves credit, but it is not the only material of merdit for filling as some claim. It often serves a good purpose and under some circumstances can be advantageously used and in certain cases is superior to any other material, but to attempt to force its use in filling all cavities and under all circumstances is an absurdity and proof that those who so advocate are contracted in their ideas and limited in knowledge as to the best means of treating and preserving the natural teeth.

On the subject of root filling there is great diversity of opinion and advocacy of sundry material and modes of introduction. Nothing that has been recommended is equal to beeswax and cotton fibre, it can be more easily and quickly introduced, and more perfectly precludes the possibility of ingress of fluids to nerve canal than any other material; it is "non-conducting, non-irritant and non-destructible," three very important requisites in the operation of root filling.

Capping exposed nerves is a risky business and should not be ventured often, now and then there may be success, but so seldom compared to failures, the risk is hardly worth taking.

A nerve devitalized and removed from sentient extremity of root canal, admits of promise of comfort to patient and preservation of tooth for a great while, generally speaking, patients are satisfied with and appreciate such operations, but complain heavily and justly so, if effort to save by capping proves a failure.

Operative dentistry, or in other words, proper care and treatment of the mouth, teeth and soft tissues from early childhood to years of maturity, would in the course of time (a few decades) abate to a very considerable extent necessity for mechanical dentistry, and this is to be the ultimate destiny of the profession, all should hope for it, and labour for it, especially in dental colleges.

Southern Dental Journal.

SURGICAL TREATMENT OF IRREGULARITIES.

By L. C. Bryan, D.D.S., Basel, Switzerland.

There is one class of irregularities which is exceedingly annoying and "time robbing," as the Germans say ; and after a considerable waste of energy on my part, and a trial of endurance on the part of the patient, I have for four years tried surgical treatment on them of what might be called a heroic nature. Irregularly erupted incisors and cuspids erupting palatally—inside the arch—are the special class to which I refer ; but the treatment described for them will apply in modifications to a variety of irregularities.

The notorious resistance of the long rooted partially erupted cuspids to almost all of the usual appliances for their regulation, and the persistent effort necessary to move them, with not infrequent cases in which this resistance requires a force which not only puts serious strain on other teeth used as fulcrums or abutments, but produces displacement of them of a serious and annoying nature, are my excuse for presenting the following treatment given a cuspid which has erupted irregularly inside the arch, say for a young lady of twenty.

The treatment which I have finally adopted is to inject cocaine and either partially cut away the thick intervening alveolus with drills and long fissure burs, or when the alveolus is thin, bodily wedge the outer alveolar wall away with a half round, wedge shaped chisel, by inserting the point of the instrument between the tooth crown and the bone, and forcing it up along the root until enough space is secured for the tooth to be brought out into place outside the lower tooth. This latter I formerly accomplished by pressing the above wedgeshaped instrument or the inner beak of a suitably formed forceps up along the palatal surface of the tooth until the crown was forced outward sufficiently to be firmly grasped. It was then brought gradually out into place, and secured with a small plate, or ligatures. My present method of operating on these cases is much simplified by a forceps and fulcrum.

A curved long round serrated jaw rests on a fulcrum fitted to the arch of the maxillary to be operated on, and a short beak pushes against the palatal aspect of the tooth to be brought out into line. I consider it absolutely necessary to lift the alveolar plate before attempting regulation on account of the great danger of accident to the pulp if the alveolar margin including the solid septa between the teeth are not broken up. The outer alveolar plate must be so broken up nearly as far as the apex, that the apex will not be moved in its position, otherwise the nerve will be cut off by any considerable lateral movement of the point of the root.

In bringing teeth into the arch by any system of regulating, or in moving them in any direction, in which heavy alveolus is to be encountered, great assistance is afforded to nature in her efforts to absorb the alveolar bone through which the root must pass, if a part of the bone is drilled away, and the inflammation which accompanies absorption by almost all the usual methods of moving teeth is greatly lessened.

The greatest point of resistance in the alveolar wall is the heavy margin, or ridge, and the septum which clasps the neck of the tooth ; and if this is broken up, either by wedging outward, or drilling it away, the deeper bone, which is very cellular and soft, offers little resistance to the tooth root being moved. The strength of this alveolar ridge of bone is so much greater than that of the internal body of the bone that when teeth are pushed with great force, applied against the point, this ridge acts as an unyielding fulcrum, while the point of the root moves an equal distance in an opposite direction to the point, generally cutting the pulp connections off on the bone through which it is moved. Shocks, such as blows on the incisors often cut off the nerve and pulp connections in this way, while the heavy marginal ridge keeps the centre or neck of the tooth apparently in its normal condition, the point having moved suddenly through the soft cellular bone, and destroyed the connection of the pulp at the apical foramen.

In moving teeth by traction with ordinary forceps, great care must be exercised, and the forcep beaks must be lined with sheet lead, that the enamel be not injured, or the tooth slip. A strip of sheet lead the breadth of the tooth is bent over the crown from one side to the other, and burnished down approximately to the surface. When a tooth crown is sufficiently prominent to take an impression, a model of it can be placed in the beaks of a suitable forceps, leaving space around it, and inverting the points of the forceps, melted lead can be poured around the model of the tooth so as to fill out the jaws of the forceps. The resulting lead capsule, slipped over the tooth in the mouth, can be grasped with perfect security by the forceps, and they cannot slip or injure the tooth, although the tooth crown may be decayed and frail. The strip of sheet lead or tin, will generally answer the purpose and is much simpler. In extracting teeth which are to be replanted, or implanted, the crown should always be protected with sheet lead or sheet tin.

By the injection of cocaine, or the application to the gum of calorific fluid, the pain of drilling, or breaking away the bone, can better be borne by highly sensitive or nervous patients than the continued pain of regulating pressure, and consequent systematic disturbance from inflammation and broken rest. When general anæsthesia can be resorted to, the work can be done more thoroughly and carefully. But a small thin model of the points of the antagonising teeth should first be made to use a bite for the articulation when the jaws are in a rigid state under the anæsthetic.

The first impression of those who have not seen the easy and generally painless manner in which the operation may be performed is that it must be a very cruel operation, while those who have seen the operation and the patient will assure you that, with cocaine injected after taking an alcoholic stimulant or strong coffee a half hour before the injection, to prevent systematic disturbances from the cocaine—it is the most humanitarian method of operating for irregularities.

The after-effects are generally very satisfactory, no pain being experienced except soreness, and occasionally some swelling, lasting for some hours. The open socket at the palatal side offers perfect drainage should any inflammation supervene, but patients complain of no inconvenience and are much pleased to get through with it so easily—each one of whom I have inquired have said that they would willingly undertake it again if necessary.

Young persons are particularly suitable subjects. I have operated in two cases for seven-year-old girls, who for filling operations were particularly nervous and sensitive, who did not, with a cocaine injection, make the least sign of the slightest pain in bringing in each case a right superior central incisor—the roots of which were not fully developed—from the inside to the outside of the arch. Both of these cases never gave a moment's pain during or after the operation, and the teeth after one year and four months, and one year and nine months respectively are in *perfect condition*, only having been tied to the adjoining central to steady them, for several days.

In two cases of ladies of twenty-five and thirty-five years respectively, some pain was felt after injections of cocaine when forcing the tooth out with forceps, but described it as a dull pain not severe, and more easily borne than excavating a sensitive tooth.

Since 1888, I have had fifteen cases, all of which have been successful except two.

The Dental Review.

RECENT ADVANCES IN DENTISTRY.

By Dr. J. Taft.

The views in regard to the education and training necessary for a dentist are undergoing a radical change, and there are indications of an earnest desire for something better than has been heretofore offered ; and in answer to this change of view very pronounced and significant changes in educational methods are being tested in the way of more thorough clinical, technical, and mechanical demonstrations and careful manual training of the student.

The favour with which the union with dental colleges is now received by medical and other institutions of learning is prophetic of great things in the future. It shows a better appreciation of dentistry by the medical profession. Physicians have come to recognize dentistry as a branch of the great healing art.

In referring to the increasing number of dental graduates, Dr. Taft said that as the public becomes better informed and more intelligent as to the need and great value of the dentist's services the demand for good dentists will be much larger, and there is no present reason to fear an over-supply.

In regard to the preliminary requirements of students, he said that in nearly every case before a young man undertakes the study of dentistry he asks some dentist for advice, who, if he is acquainted with the young man, can better judge whether he has moral, mental, physical, and educational fitness for the profession than can be ascertained by a preliminary examination by a college faculty; and to a great extent on this adviser rests the responsibility of the admission to the profession of fit or unfit men. More attention should be given to a broad, liberal education and culture. A breadth and depth of culture gives power and strength,—makes one better in his profession, and gives him a better standing and influence with his fellows.

In closing, Dr. Taft deplored the fact that the dependence of all dental colleges for support upon the fees from students made the getting of students of such paramount importance that there perhaps were cases of unfit persons being admitted for the sake of the fee, and suggested that unless dental colleges were endowed with funds for their support, or were connected with institutions which were so endowed, this danger would always exist.

The Dental Cosmos.

THE USE OF THE MALLET.

Are not some carrying malleting too far? Recently we heard a dentist say, "I seldom use a hand plugger." Such a dentist will seldom have a perfect filling; for it will not be uniformly condensed, unless all parts are in full view of the direct blows of the mallet. It is much more necessary to have an evenly condensed filling than one that is very hard; and as we have intimated, it is often impossible to condense perfectly into all portions of a cavity with the mallet only. Then, again, without alternating hand pressure with malleting, you will often have a rocking filling uniformly hard. If you cannot perceive it at the time, you will be convinced of this afterward by its leaking. A stain will show through the front wall, if it is thin; and finally a defect will appear, by-and-by, this will become brittle, and crumble; the "splendid" filling will drop out, or will have to be removed if it will not remove itself, and you will find foreign matter and decay all along down the wall of the filling. What does this mean? Every malleter who ignores hand pressure will do such defective work. The gold must be gently crowded toward the walls of the cavity in all directions to make a solid, preserving filling.

Items of Interest.

THE RUSSIAN PLATINUM DEPOSITS.

The most distinctive feature of the platinum beds in the Ural Mountains is that in them the metal occurs in grains, embedded in a layer of friable, easily washable sand, whereas in Brazil and the American Andes the platinum occurs in hard serpentine rocks as an ore, and is never found in grain form. The principle districts in the Urals in which platinum is found are at Bisserski, in the government of Perin in the district of Khotourski, and in the State properties of Goroblagodatski, where sixty-six mining consessions have already been granted. On the Western declivity of the Ural Mountains there is another platinum bed, near the river Outka. The proportion of platinum grains is from 17 to 21 grammes to every 1,640 kilos. of sand. In some of the beds the thickness of the turf covering the sand does not exceed from 2.16 metres to 2.88 metres, while in others it varies from 10.80 metres to 14 metres so that it becomes necessary to work underground. The thickness of the platinum sands does not vary much. The platinum found in the northern district contains a considerable proportion of gold, whereas that found in the Taghil district contains hardly any. They are also very different in appearance. The former appears clear and very brilliant, while the latter is of a very dull colour, and is frequently found mixed with rare metals such as iridium and osmium. The demand for platinum for industrial purposes only dates from the last twelve or fifteen years. It is now largely used for electric lighting and dynamo conductors, and considerable quantities of platinum are also employed in chemical and other factories. During the last twelve years the annual production of platinum has averaged about 3,194 kilos., of which half has been derived from the beds in the north of the Ural Mountains, belonging either to the State or to private persons. Throughout the whole world only about 3,270 kilos. of platinum are annually used; but it is anticipated that this amount will be considerably increased, and it is stated that platinum-beds of Bisserski can alone supply the total quantity required for the consumption of the world. When the demand for platinum was insignificant, and the price very low, the gold miners who found platinum while seeking gold frequently, it is stated, used the former instead of lead as shot for firing at wild birds. All the platinum extracted from the Ural Mountains, after having paid a tax of 3 per cent. in kind, is sent as raw ore to St. Petersburg for treatment and shipment to foreign markets.

A MATRIX IN FILLING.

By W. R. Sine, D.D.S.

This appliance transforms a former tiresome and arduous task into a mere pastime. Take, for illustration, the upper right central incisor mesial surface. The decay involves a considerable portion of the lingual wall, the labial wall is also broken. After adjusting the rubber-dam, I take a strip of copper about 30 gauge, almost as wide as the length of the mesial surface of tooth, and one, or one and a half inches long. After trimming one end oval I anneal it, and insert between the affected tooth and the left central incisor, allowing the oval end to project beyond the lingual surface about a quarter of an inch, being governed by the extent of the broken wall it is destined to restore, making a liberal allowance for friable margins that will be cut away in the preparation of the cavity. I then bend the lingual end of the strip under the lingual surface of right central, and the labial end over the labial surface of left central. While holding firmly in place with the fingers of the left hand, I press on the labial end of strip, and burnish over the lingual end, easily and quickly obtaining a perfect adaptation to the lingual surface of tooth. The strip is then removed, ordinary care being observed to prevent a change in shape. After removing, the depression caused by burnishing is filled with silver solder. If an abundance of solder has been used, the result will be a matrix that has the combined advantages of solidity, stiffness, cheapness and accuracy. This can then be polished brightly on the surface against which the gold is to be packed, stiff brush wheels and pumice being first used, and then a soft brush with prepared chalk. The cavity is now prepared in the usual manner for filling, after which the matrix is readjusted and held firmly in position by a matrix clamp designed for this purpose, the clamp standing well out of the way, exposing the entire surface of tooth to be filled. After the filling is inserted, and clamp and matrix are removed, the lingual surface will be found highly polished. It rarely requires any further finishing

Items of Interest.

Reports of Societies.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

The third General Meeting of the above Society was held on December 20th, the President, Mr. P. A. Linnell, in the chair.

Mr. **Lees**, the Hon. Secretary, read the minutes of the previous meeting, which were duly passed and confirmed.

CASUAL COMMUNICATIONS.

1.—Mr. A. L. **BOSTOCK** showed a book printed in 1804, entitled, "A Dissertation on Artificial Teeth," by Monsieur Chemant, of Paris and London. A testimonial of this gentleman's teeth, in the shape of a poem, is contained in the book, and is very amusing. Mr. Bostock said he was endeavouring to get possession of this remarkable book in order to present it to the Library.

2.—Mr. **LINGFORD** presented a tooth which had been picked up on the sea-shore, showing in a curious manner the polish produced by the action of the waves and sands.

The following questions, taken from the box at the last meeting, were read and discussed :—

1.—Will any member explain how impression trays are made by the Lennox method?

Mr. **SIMMS**, in opening the discussion of this question, said that when time allowed, he always preferred making a special tray in difficult cases. He noticed that when any impression is kept for a long period of time in the mouth, the muscles of the soft palate tend to draw down the impression material at that region. This action extends also towards the front of the mouth, over at least two-thirds of the palate. A special tray is also useful where there is a tendency to vomiting, as the shorter time required to take a perfect impression with a special tray, favours the absence of this disorder. His method of making a tray was as follows :—Take an impression in the first place with an ordinary tray, and run a plaster model. A piece of composition of about the thickness of wax is placed firmly on the model, so as to cover all the necessary parts. The model and composition is then wetted and a sheet of softened wax is pressed over the composition. When the wax is hard, it is separated and invested in the Lennox flask with plaster. A groove is cut into the plaster so as to allow the metal to be poured in at the top, and the metal which runs into this groove, forms a very convenient handle. The model does not require much drying previous to the pouring of the metal. The disadvantage of this metal for impression trays was its cost. He thought that a mixture of tin and lead served the purpose equally as well as the Lennox metal.

Mr. **LEES** thought that Mr. Betts' method of making trays, answered just as well as making one by the Lennox plan. He preferred taking a rough impression, and making a plaster model. On this a sheet of composition is pressed and a wire is inserted for a handle, the undercuts having been filled up with wax. The impression was then to be taken in the ordinary way, in plaster of Paris.

Mr. **Minshull** preferred cutting away the composition in the original impression with a scalloper, thus doing away with the necessity of a special tray.

(2) Has any member noticed that on passing a bristle for the first time, after devitalization, down a pulp canal, there is a sensation of tenderness; and can they explain its reason?

Mr. **Simms** regarded it as an increased pressure on the periosteal tissue at the extremity of the root, consequent on the cutting off of the blood supply to the pulp.

Mr. D. **Headridge** said there might be two explanations, (1) that there were supplementary canals passing from the pulp externally, and (2), the more likely theory, that it was due to the piston-rod action of the bristle, causing an air concussion.

(3) What was the best means of preventing the action of iron on the teeth, when taken in medicines?

A discussion arose as to the nature of the action implied by the question, but it was at last amended to the staining action.

Mr. D. **Headridge** considered that there was only a staining action caused by iron. He had taken considerable quantities of iron, and recommended the use of glass tubes as a medium, thus preventing direct contact with the teeth.

Mr. C. H. **Smale** mentioned a case of a lady losing all her teeth through the drinking of medicines containing iron. He mentioned *pari passu* that $Fe\ Cl_2$ contained HCl, and said that means should be taken to prevent this unfortunate occurrence.

Mr. P. A. **Linnell** suggested that an alkaline solution should be prescribed by the medical practitioner, to be taken after the iron medicine to neutralize the acid action of this drug.

A telegram was then read from Professor Hare, regretting his inability to attend and read his paper on Oral Surgery.

During the remainder of the evening, Mr. D. Headridge exhibited a collection of regulation cases, with their apparatus, which proved very instructive and interesting. He showed a plate for the fan-shaped expansion of the palate, the base of the fan projecting towards the front of the mouth.

Mr. **Simms** spoke on his method of rotating teeth, which was shown before the British Dental Association last August. Messrs. Linnell, Smale, Bostock, Lees, and Leeming, also took part in the discussion.

Mr. **Lingford** proposed that a vote of thanks should be accorded to Mr. W. Simms and Mr. D. Headridge for thus filling up the evening with so interesting a discussion, which was seconded by Mr. **Stephenson**, and carried unanimously.

This terminated the proceedings.

STUDENTS' SOCIETY, LIVERPOOL DENTAL HOSPITAL.

A meeting in connection with the above Society was held Nov. 19th, 1892. R. H. Bates, Esq. in the chair.

The Secretary's minutes of the previous meeting having been duly sanctioned, the following gentlemen were elected as members :—Messrs. Capper, Scholefield, Shields, Harding, Robinson, Anderson, and Harrison.

Mr. Coysh was proposed as a member to be balloted for at the next meeting.

The Chairman then invited any casual communications to be brought forward, when several gentlemen responded.

Mr. **Bates** exhibited upper and lower models, showing the absence of the upper bicuspid teeth, while the lowers were perfect and regular.

Mr. **France** showed two excellent specimens of exostosis in lower wisdoms.

Mr. **Gilmour** exhibited a lower canine with a piece of necrosed bone attached. He also showed models of remarkable irregularity of the teeth in a girl ; also a good specimen of an odontome.

Mr. **Woods** brought forward an upper bicuspid tooth, having three distinct roots ; also a model, showing exceptional mal-position of lower canine.

At the conclusion of the discussion on the several communications, the chairman called upon Mr. France, to read a paper on "Taking Impressions," which is published on page 110

A very interesting discussion ensued, in which Messrs. Bates, Royston, Mansell, Phillips, Coysh, Parsons, Woods, Scholefield, and Shields took part.

A vote of thanks having been passed to Mr. France for his paper, the proceedings terminated; the chairman announcing the next meeting for Dec. 16th, 1892.

Dental News.

NATIONAL DENTAL HOSPITAL.

Mr. Harry Rose has been re-elected to serve a further term of office, as Dean.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
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THE MICRO-ORGANISMS OF THE MOUTH.*

By Edmund W. Roughton, B.S., M.D. Lond., F.R.C.S.Eng.

Mr. President and Gentlemen,—If there were no micro-organisms in the mouth there would be no decay of the teeth, and if there were no decay of the teeth there would be very few dentists, and consequently the Odontological Society would have no existence. No further apology is necessary, I think, for bringing this subject before you to-night.

Perhaps I may not be able to tell you anything that the majority of you do not know already, nevertheless, I hope that your time will not be wasted if I bring before you in a practical way a subject, the importance of which to the dentist and to the surgeon who operate upon the mouth cannot be over-estimated.

I propose to deal with the subject in the following order :—

1. The non-pathogenic organisms of the mouth.
2. The pathogenic organisms.
3. The effects of these organisms on the mouth and other parts of the body.
4. Practical conclusions.

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*Read before the Odontological Society of Great Britain.

1. THE NON-PATHOGENIC ORGANISMS OF THE MOUTH.

The mouth forms an excellent incubator or warm chamber for the growth of bacteria; its temperature is pretty constantly about 37° C., which is found to be the optimum temperature for the growth of most organisms; sufficient access of air is afforded for those germs which require oxygen or are indifferent to its presence. Food material for them is present in abundance; dead and cast-off epithelium affords nourishment for at least some germs, for it is not uncommon to find squamous epithelial cells covered and partly disintegrated by chains of bacteria. Particles of food remaining between the teeth after a meal are utilised by bacteria; this may easily be proved by chewing up some bread and placing it in a stoppered test tube in the incubator; after two or three days, examination under the microscope will show that many different sorts of bacilli and micrococci are present in abundance. Even such a hard substance as dentine is, when decalcified, readily devoured by many of the mouth bacteria. When we add to the above food materials the exposed pulps of teeth, buccal mucus, and inflammatory exudations from the gums, we shall see that there is no lack of nourishment for germs resident in the mouth. Wherever there is something worth having and nothing to pay for it, it is only natural to expect a crowd; and so it is in the mouth, for here germs simply abound. Whenever we open our mouth to take in food, drink or air, we admit at the same time a great many micro-organisms of different sorts, and it is only reasonable to expect that they, finding such comfortable quarters, should settle down and propagate. These considerations might lead one to suppose that the human mouth would contain every single germ in existence; and so it would were it not for "the struggle for existence" which is constantly going on everywhere, causing the stronger to prevail, and the weaker to perish; thus it is that although over a hundred different sorts have been discovered, the number of regular tenants of the mouth is very small, viz., about six. It seems that the conditions in the mouth exactly suit these few bacteria, enabling them to crowd out all others; moreover, it is a strange fact that they absolutely refuse to grow outside the mouth on any of the artificial nutrient media of which we know.

If a small portion of the soft white matter, which collects upon the teeth, be spread out in an extremely thin layer upon a cover glass and stained with an anilin dye, such as gentian-violet, a specimen of great beauty and interest, from a bacteriological point of view, will be produced. If we examine it with a one-twelfth oil immersion lens we shall see swarms of micro-organisms of different sorts and sizes, some being rod or thread shaped, some round or egg shaped, and other spiral or screw shaped.

(*a*) *The rod shaped organisms.*—Of these there is a great variety, both with regard to length and breadth, some of them being jointed transversely and others jointless. The name leptothrix is commonly given to the jointless thread-like forms; the name, however, is not a good one, as authors are not agreed amongst themselves what to include under it, and what to exclude. Most commonly leptothrix filaments appear as a jumbled-up heap, like an entangled piece of string; sometimes the threads are much larger and wavy in outline, many threads being attached to a sort of common root of structureless material.

The jointed rod-shaped organisms (bacilli) also vary greatly in size; notable amongst them on account of its dimensions is the bacillus buccalis maximus, which is found in long thick jointed rods about three to ten μ long, sometime singly, sometime in tufts. It is stained violet by iodine, whereas the leptothrix remains unaffected. Many other bacilli will usually be seen in different specimens and in different mouths; some of these being pathogenic will be referred to subsequently.

(*b*) *Spherical Organisms or Micrococci.*—The micrococci, although perhaps as numerous, are on account of their smaller size less conspicuous than the bacilli and threads. They are sometimes in clusters, sometimes in chains, or tetrads, or pairs, or scattered singly. The pairs, tetrads and chains, when short, are sometimes enclosed in a transparent glassy-looking capsule.

(*c*) *Spiral Organisms.*—The occurrence in the mouth of curved organisms resembling a comma has long been recognised. Professor Lewis drew especial attention to them, and he and Klein at one time regarded them as identical with Koch's cholera bacillus, but subsequent investigation has shown that although much alike in morphological character, they differ in this marked respect, viz., that whereas the cholera vibrio grows readily on gelatine, the comma bacillus of the mouth (spirillum sputigenum) refuses to grow anywhere but in the mouth. In an ordinary clean and healthy mouth it is found in small numbers, but under the margins of slightly reddened and inflamed gums it is found in large numbers. When examined in the hanging drop, *i.e.*, in its natural live state, it is seen to be highly motile; it is by means of flagella or whip-like processes that these motile organisms move about. The number and mode of attachment of the flagella varies a good deal; in some of them only one flagellum is to be seen, attached either to one end, or to the middle of either the concave or convex side of the comma, whilst in others a bunch of four or five flagella is not infrequently seen. They may exceed the length of the comma itself by several times; they cannot be seen in the unstained condition, nor indeed by the ordinary method of staining. They require to be treated with a mordant, and then stained after the method of Loeffler. Sometimes two or more comma bacilli may be seen in a row, end to end, forming a short spiral; this is due to incomplete fission.

Another spiral organism often found under inflamed gums is the spirochœte dentium. It occurs in the form of long wavy spirals of varying thickness and size of twists. It has been supposed to be a stage in the development of the spirillum sputigenum. I cannot, however, accept this view, for the spirochœte is much thinner and takes the stain with much less readiness than the spirillum sputigenum; moreover the short spirals formed by the latter are much coarser and more clumsy looking. Very little is known about this organism.

II. The Pathogenic Organisms of the Mouth.

The organisms which I have just described, and which occur in nearly every mouth, are nearly all of them non-pathogenic, *i.e.*, they are incapable of producing any morbid condition when injected into the blood or tissues of an animal. The fact that they are uncultivable has rendered it probable that they are also uncultivable pathogenic organisms inhabiting the mouth; indeed such organisms have been described by Kreibohm and by Miller. But passing these by, there are others which have been cultivated and very fully studied.

It has long been known (even to the ancients) that the human saliva was poisonous, although it had been a popular idea that saliva was an excellent lotion for slight wounds. This toxic property has been, from time to time, attributed to various causes, but it was first shown by Raynaud and Lannelongue in 1881 that it was really due to the presence of micro-organisms. About the same time Pasteur discovered in the mouth of a child suffering from hydrophobia an encapsuled diplococcus resembling the figure 8. Saliva containing these germs, when injected into rabbits, produced a rapidly fatal result. This he considered to be the specific germ of hydrophobia, but Vulpian soon afterwards produced the same symptoms and fatal results by injecting healthy saliva, and the same capsule cocci were found in the blood of the dead animals. A. Fraenkel discovered the same organism in cases of croupous pneumonia, and others have since found it in peritonitis, pleurisy, meningitis, otitis media, and other inflammatory processes. In the causation of these various diseases it plays a most important part, if indeed it is not solely responsible for them. This important organism is now designated the micrococcus of sputum septicæmia. It occurs frequently in the mouths of healthy persons in the form of encapsuled diplococci, which are not always easy to find under the microscope, but whose presence may be demonstrated by injecting some of the saliva into mice. Out of one hundred and eleven mice killed in this way, Miller found the micrococci of sputum septicæmia in the blood and tissues in sixty-one. The saliva had been taken from a different person in each case.

This micrococcus will grow on culture media, but not readily. It requires a temperature somewhere between 24° and 42° C., and a faintly alkaline medium. The colonies resemble dewdrops in appearance. They will not live much longer than five or six days, after which time, if it is desired to further propagate the species, it must be done by passing it through the body of a susceptible animal, and from its blood inoculating fresh culture media.

The descriptions of this organism by different observers differ somewhat in detail. This fact, coupled with its widespread pathogenic action, has led one to suspect that there may be more than one variety of it. Miller has described four separate varieties, which he designates by the numbers 1, 2, 3 and 4.

No. 1 is identical with the pneumococcus of Fraenkel. It is always encapsuled in the body, but never in cultivations.

No. 2 differs slightly from No. 1 in its growth on artificial media, and is encapsuled in artificial cultures as well as in the body.

No. 3 differs but slightly from No. 1.

No. 4 differs from the others in that it very soon loses its virulence in passing through the bodies of mice.

Many other pathogenic organisms have been found in the mouth and isolated ; in a short paper like this, it is impossible to describe them. Some of them will, however, be referred to in the next section.

III. THE EFFECTS OF MICRO-ORGANISMS ON THE MOUTH AND OTHER PARTS OF THE BODY.

(*a*) *Local Effects.*—Dental caries is nothing more or less than the devouring of the teeth by the micro-organisms of the mouth : the only conditions that the germs exact are that the dentine shall be exposed by removal of its enamel covering; and decalcified by acids. Of course, the causes which bring about these conditions are manifold ; nevertheless, in a perfectly germless mouth there could be no caries.

In sections of decayed dentine, the tubes are found to be crammed with different sorts of bacteria. In some places, the tubes are bulged by the pressure of the growth inside them, forming the so-called liquefaction foci.

In transverse sections of decayed dentine, the tubes themselves are crowded with dense masses of bacteria, whilst between them, wavy filaments of leptothrix may spread out in all directions.

Sooner or later the decay (and the bacteria) extends, if unchecked, to the pulp cavity, causing acute inflammation, and perhaps gangrene of the pulp ; the bacteria may then extend to the apical foramen, producing an alveolar abscess with its possible results, such as disfiguration of the face, necrosis of the jaw, spreading suppuration, septicæmia, pyæmia and death. Such cases may be found recorded in considerable number in medical literature.

Extension of inflammation from the teeth to the maxillary antrum is well known. From one such case I was able to obtain specimens of a diplococcus, probably the M. of sputum septicæmia, the M. tetragenus, torula and staphylococci, the bacillus buccalis septicus, and other bacilli. No doubt there were others in the same case which I failed to detect.

The various inflammatory and catarrhal conditions and ulcers about the mouth, are, to a large extent, due to the action of bacteria. Some local or constitutional condition diminishes the vital resistance of a part of the mucous membrane, and so permits of its invasion and destruction by germs.

I have no doubt that pyorrhœa alveolaris is produced in this way. This disease, although familiar to every dentist, is often overlooked, I am sorry to say, by physicians and surgeons. There has, as you are aware, been much discussion among dental pathologists as to the nature of this disease; some have held that it is a purely local affection, and others that it is entirely constitutional. Now the truth is, I believe, half way between the two, as is so often the case when two schools take diametrically opposite views. In all germ diseases it is necessary to lower the vitality of the part before the germs can touch it. There are very few, if any, germs which, when placed upon a perfectly healthy uninjured mucous membrane, can do anything but die. There are many obvious ways in which this lowering of vitality may be brought about in pyorrhæa alveolaris. Accumulation of tartar, slight gingivitis, injuries to the gum, &c., may be cited as local predisposing causes, whilst struma, gout, syphilis, rheumatism, and wasting diseases act as constitutional predisposing causes. Germs are present in abundance in the pockets between the gums and the teeth, as any one may convince himself of by making a cover-glass preparation of the pus which oozes out on pressure. I show a photograph of a culture on agar-agar, inoculated from the pus in a case of pyorrhœa after cleansing the surface of the gums. It consists of pyogenic staphylococci and streptococci. Miller has isolated twenty-two different organisms from twenty-seven cases of pyorrhœa. It would appear, therefore, that there is no one special germ which can claim this disease as its own, but that any of the pyogenic bacteria may produce it when the necessary predisposing causes have prepared the ground for it. That pyorrhœa is in reality a germ disease, is further corroborated by the remarkable effect of treatment by perchloride of mercury. Recently, a woman came to my out-patient department, at the Royal Free Hospital, with very spongy bleeding gums, and pus welling up in abundance from between the teeth and the gums. I advised her to cleanse the gums, and then twice a day to stuff down minute wisps of cotton wool soaked in 1 in 2000 perchloride solution into the gum pockets, working carefully around each tooth. When she presented herself a week later, the gums presented a natural appearance, no longer bleeding when touched, and no pus oozing up on pressure. The worst of this treatment is, that when efficiently carried out, it diminishes the discharge of pus so quickly, that patients are apt to think they are cured, whilst there is still some minute suppurating spot between or behind the teeth from which the disease may spread again. The teeth tighten up wonderfully after this treatment in recent cases, but of course, when much absorption of the alveolus or necrosis has occurred, it is impossible to restore the lost socket, and the teeth remain loose although the suppuration has been stopped.

(*b*) *Remote Effects.*—After all large operations on the mouth one of the greatest dangers to be feared is some form of septicæmia, for by such proceedings we bring about conditions very favourable for the entrance of germs into the system—in fact, we imitate very closely the experimental injection of septic saliva into animals, the fatal results of which have been already alluded to. Perhaps at the time of the operation when we make our incisions, germs may enter directly into the circulatory system. The abundant oozing of serum from the large raw surfaces left by the operation affords additional culture medium for the growth of micro-organisms; the injury inflicted directly on the tissues diminishes their vitality, and thereby their power of resistance to septic infection, and the loss of blood (always serious in a large mouth operation) weakens the whole system and still further renders it a prey to the ravages of invading micro-organisms. Not only after large operations, but after the extraction of teeth and lancing of gums, fatal septicæmia has occurred. Not only may a dirty mouth serve as a source of infection for its owner, but also for other patients operated on with the same instruments imperfectly cleaned. It is well known that syphilis has been inoculated in this way, and, perhaps, other diseases too. It must also be remembered that there is risk to the operator as well as to the patient in the performance of an operation in an unclean mouth. Both local and general infection may follow injuries to the fingers by ragged teeth or dental instruments. Miller has recorded a case of chronic pyæmia in a dentist who injured his finger with a burr whilst clearing out a decayed tooth. The result was suppuration in the wounded finger, the axilla, the lungs and elsewhere, no less than 135 abscesses forming in the course of two years. The pus contained the bacillus buccalis septicus, an organism frequently found in the mouth.

An unclean mouth, coupled with nasal obstruction and a weak state of the general health, are the conditions most fruitful in producing inflammatory conditions of the throat, and (by extension along the Eustachian tube) of the middle ear. The pneumococcus of Fraenkel and the pneumobacillus of Friedlander (both of them frequent residents in the mouth) have been found in otitis media and in cerebral abscesses consequent upon it.

Allusion has already been made to septicæmia following an operation upon the mouth. One of the commonest forms of it is septic pneumonia, produced by the inhalation of septic matter from the mouth. The fact that the pneumococcus of Fraenkel and the micrococcus of sputum septicæmia are almost certainly one and the same, leads one to suppose that many cases of acute lobar pneumonia may be the result of direct infection from the mouth. At first sight this does not seem to harmonise with the well-known fact that pneumonia often follows directly upon exposure to cold winds, immersion in cold water, or some other form of "catching cold." But the depressing influence of cold simply diminishes the vital resistance of the lungs, and so places them at the mercy of any germs which may be inspired from the mouth or outside air.

When we swallow food or saliva we take into our stomachs hosts of germs, many of which are capable of setting up diverse forms of fermentation and so disordering digestion. This fact, I believe, is lost sight of by many physicians, who treat dyspepsia without ever inquiring into the condition of the mouth and teeth.

IV. PRACTICAL CONCLUSIONS.

Having seen the disastrous and widespread results which may follow infection by the micro-organisms of the mouth, the necessity of dealing with this cavity by antiseptic methods will be obvious. I rejoice to see that one very important branch of this subject is being actively pursued by those gentlemen who are interesting themselves in the condition of the mouths of school children. Their labours will, I trust, avert much suffering in the future.

It is not possible to conduct an operation in the mouth with the same certainty of avoiding septic infection as we can when operating on a limb, but the same principles should guide us, and we should all strive to obtain asepsis by every means in our power. It has been the custom of surgeons, and still is so, to a very large extent, to drop their antiseptics when operating in the mouth, regarding it as a situation where asepsis is impossible and therefore not worth trying for. I consider such practice to be thoroughly bad. It should be a rule that before an operation is performed within the mouth, the condition of the teeth should, when possible, be examined and dealt with by a dental surgeon. Immediately before the operation, when the patient has been anæsthetised, the mouth should be well mopped out with cotton wool soaked in 1 in 1000 perchloride, and after the operation it should be frequently syringed with some milder antiseptic.

I am unable to say what precautions against infection are taken by dentists when extracting teeth. I can only suggest that if they are not adequate the sooner they are improved the better. In a short paper like the present one, I have found it impossible to do more than give a brief general sketch of the subject, and insist upon the more important practical points; many things have of necessity been omitted. My hope is that by bringing the micro-organisms of the mouth before you in a practical demonstration, I may do you and your patients some slight service.

THE INFLUENCE OF DENTITION ON THE GENERAL HEALTH.*

By Henry Ashby, M.D., F.R.C.P.

Whatever may be the scepticism on the part of the Medical Profession, the public have a profound belief in the influence exercised by the process of dentition on the health of the child.

Among the poorer classes this belief is almost a superstition. It frequently happens that an infant is brought by its mother to our Children's Dispensary, and on being interrogated as to what is the matter with the baby, replies in laconic fashion, "the teeth!" A further inquiry brings the same answer only in a shriller key "the teeth!" Cross-examination is useless, leading questions are waste of time, all the impatient mother will vouchsafe to the irate inquirer is "it's plagued with its teeth."

Nor is this belief in the mysterious influence exercised by the developing teeth confined to the lower classes; we find the most intelligent of mothers imbued with the same ideas. They are ever ready to explain feverish attacks and attribute every ailment small or great to the teeth. Not only is every disturbance of the health attributed to the teeth from 7 months old and upwards, but infants of 3 or 4 months old are often supposed to begin to feel the effects of this plague and to suffer accordingly. Then have we not the remedy? The flourishing trade done in "Teething Powders" and "Soothing Syrups" bears ample evidence to the popular notions of the troubles incident to the cutting of the first teeth. We find this same belief in the evil influence of tooth-cutting, prevalent not only in this country but on the continents of Europe and America.

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* A paper read before the Manchester Odontological Society.

We find the same belief attaches more or less to the period of the second dentition. Certain infants suffer from convulsions during the first dentition, and consequently fits when they occur in older children are frequently attributed to the irritation of bad teeth, or the cutting of first molars. Epileptic children are not infrequently sent to the dentists to have the offenders extracted, as being the cause of the fits.

Now we may safely say, that beneath these popular notions there is a substratum of truth, there is at any rate the "half-penny-worth of bread" though there is an "intolerable amount of sack."

One result of the popular error on this subject, is that important errors in diet or serious diseases may be overlooked, if the belief be ingrained that all infantile diseases begin and end with the teeth.

The development of the teeth and their eruption through the gums is a physiological process, and as such if the infant is sound and healthy, should presumably be unaccompanied by anything approaching to disturbance of the health of the patient. The calcification of the tooth-germ, its gradual enlargement, the pressure of its cutting edge on the gum and the gradual thinning and receding of the mucous membrane, does not, as a matter of fact, in a healthy child give rise to any disturbance. The tooth is discovered through the gum without having announced its appearance by fits or any other unpleasant symptom.

But unfortunately those who live in a great city, know only too well what artificial lives many, if not most infants and children lead. We know how many of them live in a constant current of ill-health, balancing, as it were, constantly between health and disease, and but slight causes are required to affect their health.

Thus in infants and young children who suffer from rickets in its acuter forms, there is an unstable state of the nervous centres, and a comparatively small amount of irritation is sufficient to liberate the pent up nerve force and to produce a general convulsion. The pressure of a tooth beneath a tender and inflamed gum may supply the irritation in such a case. Unquestionably when a tooth is being cut the gum over the tooth is apt to become inflamed, the infant has restless nights, there may be high fever and much constitutional disturbance.

It is under these circumstances that the gum lancet is of the greatest value, as by relieving tension and letting out a small portion of blood the infant is made more comfortable; the fever rapidly disappears, pain is relieved and the infant obtains a comfortable sleep.

But besides the local relief, there is little doubt that other disturbances may disappear after the tension over the gum is relieved. The respiratory tract, the skin, the alimentary canal may all be reflexly affected. During the time a tooth is being cut, the infant may wheeze especially at night, suffering from a temporary spasmodic asthma, various eruptions may appear on the skin, and various disturbances of the alimentary canal may take place.

We see in all this the tendency to reflex disturbances which is one of the features of the nervous system during infancy, but which is exaggerated and accentuated by a state of system which is below par.

In connection with the first dentition I may refer to the curious way in which dentition is delayed in children who are rickety. We know very little of the causes which tend to delay the eruption of the teeth; but we know from experience that even in healthy children there is a tendency for the teeth to appear in groups. Thus the first to appear are usually the two lower central incisors, then an interval elapses, then the four upper incisors follow one another in comparatively quick succession, then another interval, and the lower lateral incisors and four molars appear. Later still and after a longer or shorter interval the canines and much later the four second molars.

Now in certain cases dentition is delayed for months, so that children of a year or even eighteen months may be seen without teeth. Not infrequently a long delay may take place between the groups ; so that perhaps the two central lower incisors are cut and many months elapse of weary waiting for the nurse or mother, before any others make their appearance. In some of these cases, development appears to proceed favourably, and then just as the tooth is on the point of cutting its way through the gum, there comes a long delay, which it is perhaps difficult to explain. In such cases, mothers will often urge the attendant to lance the gums in the hope of assisting in the process of eruption, but it is needless to say, that unless the coming tooth is actually stretching the mucous membrane so that the cutting edge or cusps can be distinctly felt, the lancing will be a perfectly useless procedure. I can call to mind one case in which a lateral lower incisor was lanced, the aforesaid tooth finally emerged into daylight, exactly one year to the day, after the lancing operation. In these instances, as in a good many others in medicine, it is well to bear in mind the adage "Never prophesy unless you know."

Here we may perhaps be inclined to linger over the question : are teeth, which are long in making their appearance, bad teeth? that is teeth with deficient enamel and small so that they quickly become carious. This is certainly so as a rule. The same cause in operation, which interferes with the normal formation of the teeth and which keeps them in a backward state, also necessarily hinders their eruption.

Are the teeth of rickety children usually bad teeth? This question has been answered both in the affirmative and in the negative. Undoubtedly, infants who suffer from the severer forms of rickets, and who suffer, as such mostly do, from aggravated indigestion, are late in cutting their teeth, and when the teeth appear, they are small, irregular, and pitted, and if the child's health continues poor, they quickly become carious. In some cases, I have seen children whose first or second groups of teeth appeared at the normal time, the teeth being well formed and hard, who for various reasons became rickety, the eruption of the later groups became delayed, and when they appeared, they quickly became carious and broke down into mere shells. On the other hand, in cases of slight rickets where the acuter phases have been absent, or in some children who have, more or less, bony deformities due to rickets, there may be fairly good sound teeth.

There can be no doubt that the state of the child's health affects the nutrition and development of the teeth, but there is no room for doubt either, that bad teeth in early childhood may seriously affect the health of the child.

Children are only too prone to bolt their food, especially if it is something that takes their fancy, and this habit is only too likely to become aggravated if the molars or incisors are carious or tender, and cannot be depended upon for a bite. It is needless to say, that during childhood, more than at any other period of life, the digestive juices of the stomach and intestines, are apt to be weakened by overwork and only partially digest the food, the undigested food decomposes and gives rise to gases and various deleterious matters, instead of nourishing the system. Most certainly, in childhood it is necessary that all forms of meat fibre, which the child consumes, should be crushed and torn by means of the teeth, before it is submitted to the action of the gastric juice. It may be said that this mastication of the food is rendered unnecessary if the meat be minced or given in the form of soup and no doubt, to do this is preferable to the child swallowing whole lumps of meat. But this is certainly not a physiological or healthy state of things. If the meat is minced, the child is apt to take more than it can digest, as it is saved the labour of mastication. The act of mastication is in reality necessary to thorough digestion, and cannot be dispensed with without harm. Chewing not only increases the flow of saliva but also stimulates the flow of the gastric juice in the stomach, and secures that the meal is taken slowly and with deliberation.

Again a thorough mixing and incorporation of the starchy elements of the food with the saliva, is a necessity if normal digestion is to take place.

I would strongly urge that there cannot be healthy life and a normal digestion during childhood, if the first set of teeth become quickly carious and unable to fulfil their proper functions. Who has not seen again and again, a bad set of milk teeth followed by a bad set of permanent, or rather by a second set, which are anything but permanent? Who can doubt that the failure of the first, to fulfil their functions properly, has had much to do with the failure of the final set?

This leads us on to the important practical question, are the first set worth preserving? Surely no one can doubt what the answer should be? And yet what small pains are usually taken to preserve them. Almost daily observation confirms this. How little pains are usually taken to secure a daily cleansing of the mouth and teeth in children, must be within the experience of us all. And yet we know for certain, that decomposing food in the mouth and between the teeth, are the most frequent causes of disease in connection with the teeth and gums.

May we not also say that the presence of carious teeth in the mouth may be the starting point of disease? The presence of foul and decomposing matters in the cavity of a carious tooth may readily affect the health. I would go further and say that a small or large cavity in a child's tooth filled as it may be with albuminous material, may be the breeding ground of certain specific organisms. We know that if the bacilli of diphtheria, or the cocci of septicæmia be sown on gelatine or other nutrient material in a test tube, and maintained at a suitable temperature, they will grow and increase in or on the surface of the nutrient material. Is it a very far-fetched idea to say what may occur in a test tube, may occur in a carious tooth? and thus the carious tooth act as the breeding ground for the germs of disease, which would otherwise perish or fail to develop on entering the system.

I venture to think that many good reasons could be urged for the preservation of the first set of teeth, and to carefully repair as far as possible, teeth which have already become carious. We all know the difficulty there is in dealing with children in matters of this kind, but if timely warning be taken, and the beginnings of disease treated instead of its endings, then surely the resources of the dental art will be equal to the occasion.

In my paper to-night, I have quickly run together some thoughts as they arose; no one knows better than myself their imperfections, but I trust that I have made plain the moral: that our friends, and masters, the British public, are too much given to distress themselves over the eruption of the first set of teeth, and far too little alive to the importance of taking care of them when they have entered on their important work.

O. K. TOOTH-POWDER.

Precipitated chalk ...	4 oz.	Powdered Castile soap, white	½ oz.
Powdered myrrh ...	¼ ,,	Oil of peppermint ...	5 drops
, orris-root	½ ,,		

Mix.

ANÆSTHETICS.*

By Percy Edgelow, M.R.C.S., L.R.C.P.

Lecture II.

Let us now pass on to the subject of the Administration of Nitrous-Oxide Gas.

[Mr. Edgelow here exhibited and explained a large display of the different apparatus in use for administering gas, kindly lent him for the purpose by Messrs. Ash & Sons.]

I know no instance, gentlemen, of a greater call for an appearance of entire confidence on the part of the medical man, than when he is about to administer an anæsthetic. The patient often experiences the most sinister forebodings. The thoughts of a forcible induction of unconsciousness, with the superadded dread of a possibly fatal result, often serves to unnerve the strongest will. I have known men and women submit to the very considerable pain of some operation, rather than take an anæsthetic. Others, unable to summon sufficient courage to bear an extraction without gas, have yet freely exhibited their fearful dislike to the idea of inhaling it, making use of some such expression as "I feel as if my head was going to be cut off." As opposed to these are many who positively like the sensation of Nitrous-Oxide anæsthesia, and would as soon inhale it for pleasure alone, as for the purposes of an operation. To all alike, the medical man should present a calm and confident exterior. Assurance as to the perfect safety of gas, with a deliberate promise that the operation shall be absolutely painless, that the recovery from it shall be rapid, and as a rule, complete, will do much to allay preliminary nervousness.

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* Abstracts of Lectures delivered at the National Dental Hospital, during the Winter Session, 1892-1893.

You will find ninety-nine patients out of a hundred, who allude in an apprehensive manner to any real or supposed physical defect, will point to the heart. "I have a weak heart, and hope gas won't hurt me," is commonly said. To such expressions I invariably reply, "In that case it is far safer to have the operation performed under gas, than without it," and you will find as a rule this nervousness greatly mitigated.

I think it wiser to forbear from any physical examination. If an operation has to be performed, I know of no contra-indication to the use of gas in dentistry, on a pathological basis. There are a few conditions where increased care should be observed, as in extensive lung disease, advanced heart disease, pronounced disease of the blood vessels, and this care should be particularly directed to not pushing the anæsthetic too deeply, and as an outcome from that, not attempting too much in the way of operating. It is much better for a patient with advanced heart disease to have a moderate, but of course efficient dose of Nitrous-Oxide, and have one tooth extracted, to be repeated on another occasion, than to attempt to remove two firmly fixed teeth at the same sitting, which could be accomplished in a person not so afflicted, and thus enabled to be subjected to a deeper anæsthesia. If an examination of the chest be *suggested*, I usually reply that it is really unnecessary. If, however, an examination is *requested*, I accede, more for the purpose of satisfying the patient than myself.

For choice, do not administer shortly after a heavy meal. From three to four hours after a substantial repast is the most suitable time, a less period suffices after a frugal meal.

Your apparatus should not be in too conspicuous a position. Its very appearance strikes terror in many a nervous person. Make a silent survey of your patient. An appearance of fear, tremor, pallor, suggestive of faintness, alcoholism, will all guide you as to the management of the case. The patient being seated in the dental chair, be quite satisfied that there is free play for respiration. Anything tight round the neck should be loosened, and any appearance of tight lacing in ladies should necessitate a readjustment of the offending garments. A case of death under gas occurred in Edinburgh not long ago, in which a corset figured prominently, as a cause of the fatal result. All artificial dentures must be removed. Let the feet be so arranged as to prevent them from pressing against any crossbar of the foot-piece of the chair, which often gives the muscles, when spasmodic, during anæsthesia, a good purchase for wresting the body into a possibly very awkward position for the operator. Advise your patient how to breathe, viz.: without hesitancy, and rather more deeply than usual, but without any studied effort.

Being acquainted with the tooth or teeth to be extracted, now adjust the prop. Show the support to the patient and explain the necessity for its use. You will find the word "prop" a preferable one to "gag," which suggests to a nervous patient all sorts of horrible ideas, and really adds to his or her existing timidity. In affixing it, select sound teeth if possible, against which to rest it. Be careful to avoid a loose tooth. When edentulous a soft india-rubber tipped prop or a cork should be used. The further back the prop is placed, the less in the way of the operator it is. In some patients it is difficult to place the prop conveniently far enough back on account of an extreme sensitiveness about the mouth, which excites reflex retching and almost vomiting. In these cases a narrow front central one must be used, or it must be placed as far back laterally, as this sensitive condition will permit. The foregoing refers chiefly to an operation on one side of the mouth.

When two or more teeth on opposite sides have to be removed, a central prop must be used or the anæsthetist must be fully prepared with a Mason's gag to keep the mouth open. The secure position of a prop is a most important matter, and a carefully devised situation in many an awkward mouth well repays this preliminary trouble. A second prop must always hang out of the mouth securely attached to the first. Occasionally a patient evinces an insupperable objection to a prop. I administered gas a few days ago to an elderly lady who stoutly refused to have one inserted. Well, fortunately, she had only a very few remaining teeth, and we found that when the mouth was closed (before giving gas) there was room enough to remove the left lower canine, from the edentulous state of the corresponding part of the upper jaw. In aged persons, especially, it is often easy to depress the lower jaw and thus open the mouth by firm pressure on the point of the chin when under gas. Be careful in your haste to widen a mouth, not to press with the fingers on the teeth themselves. By so doing you run a great chance both of dislocating a loose tooth, and of lacerating the mucous membrane of the lip which you are apt to insert between the teeth and your finger for the protection of the latter from the sharp margin of the former, forgetful for the moment of the injury the patient sustains. I believe that in a few instances no prop has been used, but the patient has been admonished to keep the mouth open, with success. I have tried it on two occasions only; the first apparently answered, but whether due to my repeated advice or not I cannot pretend to say. The same tactics, however, signally failed in another case, and so much difficulty was experienced in opening the mouth, that I have not ventured to repeat this gagging by suggestion. You now apply the facepiece and advise your patient to endeavour to concentrate thought on some congenial subject, this often lasting during the anæsthesia. A few drops of Eau-de-Cologne smeared over the inside of the face-piece renders its application more agreeable. It should fit accurately; no loophole for entrance of air should exist round its margin. In men with beards you will find a medium size or small facepiece often fit more surely than the larger size, the lower rim of the former skirting the margin of the lower lips above the roots of the hairs. The application of soap or vaseline in such case is not a specially attractive proceeding. Allow three or four respirations of air through the facepiece to start with, and telling your patient that the whole operation will be completed before you count up to ten, turn on the gas during an expiration. The bag should be rather more than half full at the moment of turning on, to prevent too sharp a blast of the gas rushing into the facepiece at first, but as inhalation proceeds, rapidly allow the bag to completely fill. In a few seconds you will observe the following phenomena, quickening of the respirations, duskiness of forehead and eyelids, quick temporal pulse. The respirations and duskiness continue to increase for some twenty or thirty seconds when the rate of the former slackens, whilst the latter proceeds to distinct lividity. Let strict silence, apart from your counting, prevail. Special senses are now more acutely perceptive than in the natural state. In a few seconds longer, with pulse still quick, respiration is markedly slower, deeper and becoming irregular, a little halt or intermittency leading on to true stertor, which very shortly appears. The muscles of the fingers and eyelids are beginning to twitch, and the pupil is dilating, the eyeball often rotating upwards. Still plying the gas, stertor becomes more pronounced, and respiration much impeded ; the twitchings develop into more obvious spasms, and the pulse will now be found to be slow, and in some cases almost imperceptible, when muscular spasm is strong, and the blueness of the features well marked in most instances. Your patient is now deeply under the influence of the gas, and quite ready for operation. I am accustomed to rely solely on the breathing and spasmodic movements as the index to the definite and satisfactory establishment of insensibility. The condition of the cornea is a fickle guide.

The average time in obtaining the above degree of anæsthesia, is from 60 to 70 seconds. The face-piece being removed, the extractions should commence as rapidly as possible. Every inhalation of air means a degree nearer consciousness. It is at times a somewhat difficult matter to be satisfied of the number of extractions which the anæsthesia will permit. A patient may evince an apparent consciousness of the operation by some struggling, a movement of the head, a wince or a scream, or sometimes a motion of the arm towards the mouth, as if an attempt were made to prevent any further operative procedure, and yet will assure you, on recovering consciousness, of the entire absence of any knowledge of the operation. On the other hand, a case, to all appearances profoundly insentient throughout, will occasionally surprise you by asserting a cognizance of all that was going on, the "all that was going on," usually being found to refer to the last of two or three extractions. As a general rule with anæsthesia to the depth referred to, you will have an available twenty-five to thirty seconds for operation. The return to consciousness is through a hyperæsthetic state in which the pain of an operation is magnified. It is thus better to err on the side of caution, and it will benefit you in the long run to have a knowledge of not having taken out all the teeth you might have under the administration, rather than an experience of having given pain from excess of zeal. The operation being completed, I strongly recommend the insertion of this charged woolholder over the bleeding spot; the patient can then remain in the same position until complete recovery has taken place. The prop is best left in position until sensibility is re-established, unless it moves immediately on an attempt to take it out. An effort to do so is liable to be felt by your patient, who will occasionally mistake it for the operation.

Should the eyes be open during the emergence from sleep, place your hand in front of them to shade the light, and prevent the swimming appearance of the objects in the room. Persons of feeble constitution, with heart disease, or anæmia, should be permitted a more or less recumbent position. Anæmic patients usually go under rapidly, and regain consciousness quickly; and as there is a concomitant general debility, great care not to attempt too much should be exercised lest part of the operation be conducted during that increasedly sensitive state succeeding the truly anæsthetic one, with a liability to failure of the heart's action. In consumptive cases, anæsthesia often deepens after removing the face-piece; there is also a possibility of hæmoptysis.

With children, do not push the gas after the onset of jactitations, as these will rapidly culminate in strong convulsions. I discard the supplemental bag altogether, and allow only pure gas, unmixed with exhalations, to be respired throughout. A stoppage of breathing may occur, and may be due to the falling back of the tongue and soft tissues at its base, accumulation of blood or pus, closure of the glottis from swelling of its folds, or spasm due to a foreign body, or to the action of the gas on the medulla. If this arrest last beyond five or six seconds, adopt such measures as pushing the chin well forward, from the angle of the jaw, bending the head far backwards on the nape of the neck, compression of the chest walls, or elevation of the arms after Sylvester's method. If due to foreign matter, sweep the finger well to the back of the throat, round the epiglottis. I was able in this way, on one occasion, to arrest a stump just in time, as it was passing round the edge of the epiglottis. The woolholder is most useful as a means of swabbing out collections of blood, or matter, in the pharynx. Should syncope occur, as evidenced by great pallor and absence of pulse, lower the head and shoulders and raise the lower part of the body rapidly; maintain this position for some seconds, and apply the fumes of ammonia to the nostrils.

Hysterical manifestations sometimes supervene. A little resolute speaking usually suffices to restore the nervous balance. If there is much screaming, fighting, or tossing about, the application of the wet end of a towel, in the form of determined slaps on the face, works wonders. Should there be any pronounced giddiness, or a feeling of sickness or general shakiness after the operation, rest on a sofa, or in an arm-chair in an airy position for some minutes, should be enjoined. If from the nature of the operation a longer anæsthesia than usual be necessary, in the majority of cases I administer a second or even third dose of gas, either during the return of sensibility, inserting the woolholder over the seat of the operation and rapidly putting on the face-piece; or, after allowing a minute or two's interval of consciousness, the patient well rinsing the mouth during it. When I know from a former experience, that a person does not take gas satisfactorily, then I substitute an efficient dose of ether instead of a repeated dose of gas.

In our next lecture we will consider the action of gas on the different organs of the body.

VALEDICTORY ADDRESS.*

By W. Robinson Humby, L.D.S.

Gentlemen,—Being about to vacate the dignified position to which I was elevated by your suffrage, a few words are expected from me in reference to the Society's work during the past year, and to express any hopes or fears I may feel regarding our future.

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* Delivered at the Students' Society, National Dental Hospital.

As to the papers read by students, personally I am quite satisfied. I am astonished at the extreme excellence shewn, both by the practical nature of the subjects treated, and the earnest spirit animating the readers. I wish some one could devise a means by which we all might estimate the value of the papers in the aggregate, and at the same time enable us to judge fairly who receives the greatest good, the readers or the listeners. In my opinion the reader obtains the greatest benefit. The work done during the preparation of an essay must so thoroughly enter into the reader's mind that I am convinced there is no better way to learn up any difficult subject than to prepare and read a paper upon it. Of course we must not expect much original matter from the qualifying student. There is a certain establishment overlooking the River Thames where originality is said to be sat upon severely, so those of you preparing to visit such a place perhaps had better work at accepted theories, mostly letter-press material, but consisting of practical matter in part; and although theory occupies such a prominent place in the present, it will be the results of the excellence of your daily practice that will largely determine your success in after life.

Therefore it is better that our papers should be practical as far as possible. There has been a divergence from the first list of readers and papers. This seems to have been in consequence of an overpowering diffidence on the part of the qualifying men, and we ought, I suppose, to sympathise with such modest men. Several members of the staff have however, despite the many other claims on their valuable time, come to the rescue, so that a brilliant record has been made for the Society. In past years the student members of this Society were left very much to their own resources, and such resources being limited from the smallness of numbers, it was felt that sympathy and help was reasonably to be expected from the staff. Well, gentlemen, the staff has helped us, and we were fortunate in receiving such help.

Perhaps, after all, there was no need for the nervous modesty which prevented the Society from realising the original programme. We have only to read the past papers to see that they were always good. If you consider what the objects of such a Society as ours should be,you must see that if students abstain from reading papers they are surrendering, without thought, the most valuable privilege the membership of this Society can confer.

Mr. Fisk has raised the question of demonstrations at our meetings, and I think it is one which should receive the most earnest consideration and thought. Of course one would very much like to see the system adopted, and we may be sure it would attract more men to our meetings, and diffuse amongst them a more practical knowledge of the details of operative work. This is desirable, as it is only by seeing in actual operation the methods of practice that we ever may hope to educate ourselves. There is no proper convenience here for operative work by night, so that while we utilise the building we are now in, there will be, I fear, no chance for successful demonstration meetings ; but with the new building we shall have all the necessary room and accessories, and then the matter may be satisfactorily arranged.

I have an idea in connection with the means of acquiring operative efficiency of a simple character. A student receives during his studies advice on various matters from the other students and the staff, together with practical assistance in the shape of demonstrations, but does not see every phase of work, and there is still a hungering, so to speak, which remains for ever unsatisfied. Now there is no method possible by which any man may place himself or his knowledge of methods in a perfectly complete state, still it might be forwarded nearer to an ideal condition, if he served as an assistant to a practising dentist, not as a practising assistant, but as a help to the dental surgeon in his surgery, mixing stoppings, sterilizing instruments, &c., and by being present whenever there was work going on. The time required need not be longer than three months in any one surgery; after that, or even during the same time, another term, or series of days, or hours, might be utilised in a similar manner with some other teacher, or teachers. So that nearly all the different systems of practice might be placed before him. Of course this is only my opinion, but I hope to see the plan adopted generally. I propose trying the scheme myself, being convinced that though some of us cannot personally supervise the instruction of a pupil in the art and mystery of the workroom as dental surgeons, we have every opportunity in our surgeries of giving operative instructions.

Now as the younger qualified men constitute a large proportion of our members, it is to them we must look for original material, the dearth of which, not only in this, but in other British Dental Societies, is a matter of considerable gravity to us as British dentists. Is it to be that we are for ever to allow nearly every improvement in practice to emanate from our cousins over the water? When I read the reports of Trans-atlantic Dental Societies, I am often struck by the eagerness with which the smallest atom of originality is received and discussed, (provided of course, that it is always aboriginal.) It is, apparently, of no consequence to them whether or no such small original matter is surrounded by doubtful statements, neither do they stipulate that the fact so communicated shall consist entirely of undeniable, unalterable fact. They know that the harvest cannot be gathered unless the husks are gathered with the corn; but they also know that the winds of time will scatter the chaff, and that the grain will remain.

An American dentist does not import foreign dentistry at all kindly; there he is at fault, but he is able to produce a very good article at home, so gets on tolerably well without.

If we did not import promptly and slavishly nearly everything we require for our operative work, we might as well cease to attempt to practice our speciality. I do not assert that the result of our treatment of cases in practice is inferior. I claim that in practice we are the equal of any, and that we give as great, or perhaps greater, value in our work to our patients, but this result is brought about, firstly, by the longer time we are engaged in acquiring our professional knowledge. Our growth being relatively slower, it is consequently sounder. Secondly, we are ready to import ideas from any foreign source, and thus keep to the front in actual result. But if we are to make up for lost time in originality and research, we must at once abandon our self-conscious reticence which seems to me our only obstacle, and must boldly, and at all times, assert that which we believe to be correct in ideas of our own, never fearing the consequence of some of our conclusions being afterwards proved to be incorrect. It is not proper pride which dreads the truth. After all, it is only our vanity being wounded, and the sooner that is fatally wounded, dead, and decently buried, the better it will be for us all.

The English Dental Surgeon, pure and simple, is to disappear in the not very distant future, and the man who obtains the general, in addition to the special diploma, is to take his place. As matters now stand, students are compelled by the first law of nature, self-preservation, to go in for general as well as for special qualifications, in order to share in the advantages of higher class practice. But I have a feeling of hopelessness and disappointment when I see the submergence of the Dental art beneath the waters of General

Surgery and Medicine. Rather I would see the Dental Curriculum amplified, so that the extra time occupied in the general work might be absorbed and properly utilised for our special requirements. There are important parts of our Curriculum which, though they are wise and just in their conception, are allowed, owing to laxity of supervision, to become a simple mockery. I refer particularly to the three years spent in a dental laboratory. How many dentists are there who receive the premium from a pupil for mechanical training, who conscientiously give such training? Not a large number. All the pupil receives for the premium paid, in too many cases is the questionable privilege of spending his time in the company of workmen who may, or may not, as accident directs, impart that training which the curriculum demands. I cannot suggest any remedy, although for many years I have felt that some might, and ought to be devised. There are many defects in our training, but if I wish to escape total extinction perhaps I had better let them pass.

To all the members of this Society, I tender my most sincere thanks for their tolerance of my most unworthy chairmanship, and if in making the preceding remarks I have wounded any susceptabilities, I must plead in justification, that I believe them to be true.

DENTENAMEL.

Saccharin	24 grains	Orris in powder ...	9 drs.
Bicarbonate of Soda ...	24 ,,	Thymol	24 grains
Precipitated chalk ...	12 oz.	Carmine	24 ,,
Carbonate of magnesia	3 drs.	Oil of geranium ...	24 minims
Soap in powder ...	9 ,,	,, wintergreen ...	12 ,,

Rub the thymol and carmine with the carbonate of magnesia, and add the essential oils, then the chalk and the orris, lastly the soap. Pass through a sieve, and add the saccharin and bicarbonate of soda, and again pass through a fine sieve.

British Journal of Dental Science.

LONDON, FEB. 15th, 1893.

DENTISTRY IN THE NAVY.

SOME dental visitors to the Naval Exhibition, held in 1891, may perhaps have noticed, and felt some interest in observing, the contents of certain instrument cases appertaining to the Naval Surgeon. At all events we, ourselves, were surprised to find that what was apparently the regulation dental equipment embraced the old-fashioned, yet powerful weapon, 'yclept "the key." There it reposed in its own special compartment, and one could scarcely refrain from reflecting whether the retention of this obsolete instrument was to be regarded as typical of the attitude assumed by Naval Authorities towards modern dental requirements. We remembered that when, some three years before, the Lords Commissioners of the Admiralty were approached for permission to examine the teeth of recruits, the reply stated that "the arrangements at present in force provide for all the requirements in the matter." We are glad to think, however, that the "key" was not a true omen, or at least that it no longer serves to mark the stage at which dentistry in the Navy is to be judged. Our readers may remember that we chronicled a new departure last year when Surgeon HERBERT CANTON, who also held a dental diploma, was appointed to Haslar Hospital to give a short course of lectures in dentistry to surgeons passing through the Hospital, and to otherwise educate them in the simpler operations of dentistry. We hope that some official report will be made public, and then it will be found that several naval surgeons have benefitted by the opportunities afforded them, and we may reasonably anticipate that many an able seaman will be rendered more fit for duty when he finds himself ordered off on a long cruise, far from dental hospitals. The old tale of the sick-berth steward's two pickle bottles, nearly full of extracted teeth and representing the results of some ten months' practice, may soon be relegated to the historical past in company, we hope, with the antiquated instrument already alluded to.

From what we can at present gather, we believe that surgeons at Haslar have not only attended courses of lectures, but have themselves actually taken part in the insertion of some 1,800 fillings. We are not in a position to authoritatively state the result of the first six months' work, but from such information as we have been able to obtain, we believe some 1,400 fillings have been made in that time, over 1,200 being Amalgams, some 120 Oxyphosphates, and 70 Gutta-Percha. If our figures for fillings prove correct, they have an important bearing when contrasted with other operations, for the extractions only amount to about 70. This is what we should expect, for as the ratio of conservative work rises, it necessarily follows that the time-honoured extractions will be reduced in proportion. In round numbers, 1,600 men were examined, including Boys from Training Ship, Recruits, Patients in hospital, and Sailors in port. The number of patients actually undergoing dental treatment, will, we think, be found to amount to 970. The work accomplished is in itself a testimony as to what was waiting to be done, and, to some extent, as to what is to be expected in the future. The new appointment to be made at the Training Ship "Exmouth" (reference to which will be found in our advertisement columns) is no doubt the outcome of a systematic examination of the boys' mouths, and whoever obtains the appointment, will have a splendid opportunity for furnishing interesting reports. From an examination of the mouths of recruits entering the Army, some idea had been gained as to the amount of operative work required; but until now, it has been difficult to estimate the amount of dental disease in the Navy.

We shall look forward with much interest to the publication of official statements from the "Exmouth" and from

Haslar, but in the meantime we must heartily congratulate all those naval surgeons who, whether as teachers or learners, have been taking so successful a part in work which is destined to produce far more important results from a humanitarian, to say nothing of a patriotic, aspect, than are at first sight apparent.

A TOOTH IN THE LEFT BRONCHUS.—Dr. Munro publishes in the *Glasgow Medical Journal* the details of a case of diffuse gangrene of the left lung, due to the unsuspected presence of a temporary molar tooth. Perhaps one of the most instructive points is with reference to the way in which the tooth probably found its way into the bronchus. A school-boy, aged 10 years, had his knee-joint excised on November 30th, 1892. Chest symptoms set in, and by December 14th there was diarrhœa, with quickened respiration and pulse, and the breath was very offensive. The patient died sixteen days after the operation. Besides other conditions found at the *post-mortem* examination, a carious upper temporary molar was discovered lying loose in the left bronchus just where that structure enters the lung substance At the operation, there was chloroform sickness, and the mouth was swabbed out. In this way, two loose teeth were detached from the gums and removed at the time. It is supposed that a third was drawn into the chest.

A NEW DENTAL APPOINTMENT.—In connection with our remarks upon School Children's teeth and the necessity for skilled supervision, we are glad to be able to announce that the Kensington and Chelsea School District, following the example set at Hanwell by the Central London District, have appointed a dental surgeon. We believe that the figures and recommendations recently published have had much to do with this new departure, and that all the other School Districts will feel obliged to follow suit. Mr. Louis Maitland, L.D.S., has been selected for the post. He will attend at Banstead once a week, and is at first to be allowed the services of an assistant in order to reduce the amount of caries which may be expected. This way of coping with an overwhelming amount of work at the outset is much to be recommended. We understand that systematic inspection, recording of all operations, and periodic reports, are to be features of the new appointment. There are about 700 children, and the remuneration is to be £75.

GUM LANCING.

By H. C. Wood.

Clinically, I am absolutely sure that I have seen convulsions, sick stomach, great restlessness, fever, and various other functional disturbances in young children, immediately cured by the use of the gum lancet, after the failure of various other well directed measures for relief. Theoretically, I am in accord with Dr. Kirk, in believing that Dr. Forchheimer absolutely misses the point of the matter, by his failure to understand that the good achieved is not due to the local blood letting or to the relief of the inflammation of the gum, but to the removal of the backward pressure upon an extraordinary sensitive and, at such times, congested tooth pulp. As was long ago pointed out by Dr. J. W. White, at the period of eruption the roots of the teeth are incomplete.

I have myself seen a seemingly incurable epilepsy in an adult permanently cured by the removal of a persistent milk or first dentition tooth. Amaurosis and various other conditions in the adult, are well known to be the result of irritation of the trigeminal nerve by faulty teeth. How much more is evil to be expected from teeth irritation in the child!

In conclusion, I reaffirm that whatever the theory in the matter may be, I am positive that gum lancing is the most important therapeutic measure. It is essential, however, that it should be thorough, and with the object of dividing the dense tissues that bind down the teeth.

University Medical Magazine.

Abstracts of British & Foreign Journals.

DETECTION OF PARAFFIN IN BEESWAX.

From a hint in Allen's "Commercial Organic Analysis" regarding the detection of paraffin in beeswax and the estimation of the percentage present, a series of experiments was undertaken, and the following are the principal facts elicited :—

Action of strong sulphuric acid on wax—

(*a*) Beeswax at a temperature below 100° C. carbonises, and above that temperature complete carbonisation takes place with violent action. The mixture swells up, and hard and knotty masses are formed; if the action be allowed to continue spurting takes place, a tarry liquid being ejected.

(*b*) Japan wax carbonises at a lower temperature, and the same with (*c*) wax of *Corypha cerifera.*

(*d*) Wax of *Myrica cerifera* also carbonises, and before carbonisation takes place a faintly perceptible red colour is produced. This, however, is probably a change in the green colouring-matter present.

An examination of wax (*a*) was continued. The cooled mass was digested in chloroform, decolourised with animal charcoal, and filtered. The filtrate, evaporated spontaneously, left a residue.

In order to ensure that the wax had been completely carbonised, this residue was again treated with sulphuric acid, and it gave colours from pink to violet. The residue had a cheesy odour, and was of a cream colour. Owing to the non-charring it was assumed that the residue was paraffin, and the effect of sulphuric acid upon paraffin was accordingly tried.

Result: At 95° C. faint pink hue ; between that and 120° the colour darkens to beautiful violet ; at 130° or 135° carbonisation begins.

A specimen of white wax known to contain paraffin was treated with sulphuric acid. As soon as it had began to carbonise an oily film formed on the surface, and this gradually sought the edge of the dish, where it appeared as a transparent ring. When the charring mass began to appear in small brown granules the heat was removed. The edge of the dish now had a violet-coloured film over it, and this wa assumed to be due to the paraffin present. On cooling, the paraffin could be readily removed from the edge, and it was seen to present a violet colour. Removing the paraffin it was washed with water and dried with filtering paper ; any adhering brown matter was gently removed with a knife H_2SO_4 test brought out coloration.

Inference : Sulphuric acid can be used with good results to separate paraffin from beeswax : the wax should be shaved into thin shreds, and dropped into the heated sulphuric acid. The carbonisation should not be carried too far, in order that the paraffin may not be mixed up with the charred mass

These observations were made several years ago, and others, amongst them a German chemist, have confirmed the results.

The Chemist and Druggist.

NITRATE OF SILVER IN DENTAL PRACTICE.

By A. M. Holmes, D.D.S.

In cases of superficial decay in soft teeth, where dark surfaces are not objectionable, nitrate of silver is very beneficial. By removing the softened portion of the tooth, polishing the surface and rubbing the salt into the dentine, using a warm burnisher, and varnishing the parts to protect them and to hold the remedy until it is taken into the organic matter of the tooth, there will succeed a dense, hard surface, free from sensitiveness in mastication or change of temperature. In filling cavities in the class of teeth having an excess of organic matter, with which there is so much trouble from chemical or electro-chemical action between the walls of the cavity and the filling, an application of nitrate of silver will effectively prevent these unfavourable results. The remedy is taken up by the dentine, penetrating the surface sufficiently to prevent any such action between filling and tooth.

This treatment will at times result in a darkish hue to the walls of the cavity about the filling. This I explain to patients, that they may know that it results from the treatment, and that it is a proper and favourable condition for permanency of the operation. In crowns and bridges, where the dentine is uncovered, it is beneficial to use this remedy on the teeth and roots used to sustain the bridge or crown, as a protection against thermal change, and decay. The use of nitrate of silver may be varied by applying the rubber dam, using a strong solution of the salt, and evaporating the moisture by use of a hot air syringe. When used in this way, a solution of soda can be applied to the parts to neutralize any acid remaining. In the class of cavities extending so far beneath the soft tissues as to render the use of the rubber dam or matrix impracticable, and a leakage from the surrounding tissues is liable to enter the cavity while introducing the filling and injure the permanency of the operation, cauterizing these tissues thoroughly with nitrate of silver will effectually prevent such a result.

Dental Practitioner.

Reports of Societies.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual Monthly Meeting of the above Society was held at the Grand Hotel, Aytoun Street, on the 6th December, Mr. P. Headridge (President) in the chair.

NEW MEMBERS.

The following gentlemen were ballotted for, and elected members of the Society, namely:—

Thomas A. Coysh, L.D.S. Eng., Frank Harrison, L.D.S. Eng., M.R.C.S., Samuel McDougal.

CASUAL COMMUNICATIONS.

Mr. **DYKES** showed an upper central incisor extracted from a patient fourteen years of age, the apex of the root remaining undeveloped, apparently the result of a blow some years before extraction.

The President then called upon Dr. Ashby to read his paper on "The Influence of Dentition on the General Health," which we publish on page 157.

DISCUSSION.

The President expressed the indebtedness of the Society to Dr. Ashby for his practical paper. In regard to the retarded eruption of teeth, it was his (the President's) experience, that apart from the condition associated with rickets, this slow evolution was of no disadvantage, but resulted rather in the development of stronger and better teeth. It was impossible to lay too much stress upon the importance of preserving in good condition the teeth of the temporary set.

Mr. **SIMMS** proposed that the cordial thanks of the Society be given Dr. Ashby for his paper. Speaking of the development of the teeth, he said he agreed with the remarks made on that subject by the President. His experience had been that where there was a slow development of the second teeth they were stronger. That was apart from any question of rickets. Dr. Ashby had spoken very strongly as to the importance of young children being brought periodically to the dentist. He (Mr. Simms) was only sorry that all medical men were not actuated by the same convictions. If young children were only brought to them in time, the dentist would be able to save the molars, and make them last until their successors were ready to take their place. The importance of saving the incisors was not, perhaps, so pressing, not only because they were less liable to give pain when decayed, but because they were so soon lost and replaced by the permanent teeth. Mr. Simms concluded by proposing a hearty vote of thanks to Mr. Ashby for his excellent paper.

Mr. W. A. HOOTON, in rising to second the proposition, said he would like to ask one or two questions. The first one was with regard to the molar tooth of the first dentition. He had had a case the other day of a child suffering with a molar tooth. There had been an abscess, but it had gone, and there was no pain. The tooth, however, was dead, and it was not possible to do anything in the way of preserving it. A medical man had recommended that something should be done, as the child was suffering from an affection of the lymphatic glands on the same side, in front of the sterno-mastoid muscle, and the question was whether the inflammation was due to the glandular affection or to the tooth. He (Mr. Hooton), would like to ask Dr. Ashby whether he considered in a case like that, one ought to have removed the molar. He himself did not remove the tooth, and he should like to know whether he was right in what he did. There was one other point, and that was about the relation between dentition and infantile paralysis. Some people seemed to think there were frequent cases of it, while the late Dr. Ross, he believed, thought it was very much over-estimated. It would be interesting to know what the present opinion on the subject was.

Mr. **Collett** said he agreed with Mr. Simms that where there had been no rickets, and if the teeth were delayed in their eruption they were generally stronger. He also believed in preserving the first teeth, but unfortunately the dentists did not get those cases until it was too late to be of any use. He recommended the application of Nitrate of Silver to temporary molars, which were too extensively decayed to admit of filling.

Mr. **Dougan** said he would like to know if Dr. Ashby thought that children should suffer from toothache rather than they should extract the teeth. The President had said that a perfect set of temporary first teeth was followed by an equally good second set. In the case of his own children, however, he might say they had perfect temporary teeth, but a very bad second set of teeth.

Mr. W. **Headridge** said he was of opinion that if the temporary teeth were carefully filled and protected until the proper time came for their removal, it would very much benefit the condition of the second teeth.

Mr. **Morley** said Dr. Ashby had mentioned that carious temporary teeth were very likely breeding grounds for germs. In his own practice, if he had a tooth with an abscess at the root, he left the tooth open so that the matter could escape. He would like to know whether in such a case Dr. Ashby would remove the tooth, or leave it with the cavity which would act as a place for food to lodge, and thereby conduce to the breeding of germs. Was there any benefit to the structure of children's teeth by the administration of lime water?

Dr. **Ashby**, in reply, said that he quite agreed with the remark of the President that where the eruption of the teeth in a healthy child was simply delayed for some unknown or physiological reason, the teeth were not necessarily bad, even applying to the first teeth. They could not lay down any regular rule. They knew from their experience that teeth which had been erupted long after the average period were strong and healthy. In a case of rickets, when the eruption was delayed, the enamel on the teeth was almost sure to be deficient. The question was, what was rickets? It was often said to consist of enlargements round the bony extremities. That was not the case, that was merely a phase of rickets. The latter was a disease which mostly occurred from the end of the sixth month to the end of the second year, and the process which went on during that time affected not only the bones, but every tissue in the body. He had no doubt the teeth which came while a child had the rickets were bad. In regard to Mr. Hooton's first question, it was impossible to give a decisive answer unless one knew exactly to what the swelling of the glands was due. The original cause of the inflammation might or might not be present, and in the earlier stage it might be necessary to extract the tooth. But even then they must be guided to a very large extent by the damage that was apt to follow from extracting one of the first molar teeth. That was a question upon which, owing to the want of practical knowledge, he was unable to give a definite answer. Again, it was said that dentists often refused to draw the stumps of teeth simply in order to prevent the jaw from closing up, and thus allow room for the second teeth to find their way through. If serious contraction was likely to follow on a tooth being extracted, then by all means let it remain in the jaw, but care must be taken to keep it clean. Where there was a good deal of disease round the root of the tooth, it was better to extract it even if the jaw did close up. With reference to the statement as to the first teeth being sound and the second teeth unsound, that might be so in exceptional cases, but taking the general rule, the best way to ensure a second set being sound, was by taking great care of the first set. With regard to Mr. Hooton's question, re infantile paralysis and dentition, his personal opinion was that the relation between the two had by no means been proved. The giving of lime water had no effect on the structure of the teeth.

The vote of thanks to Dr. Ashby was then passed with enthusiasm.

DISCUSSION ON THE DEMONSTRATIONS AT THE PREVIOUS MEETING.

The Discussion on the Demonstrations performed at the Dental Hospital, at the November Meeting was opened by

Mr. W. A. HOOTON, who said the first demonstration he would refer to was given by their President. From its originality, and from the very great promise it seemed to hold out, it certainly attracted very prominent attention. The operation was the fixing of a porcelain tip to the natural tooth which had lost a portion of its substance by a blow, or from some other cause. Formerly they had to adopt one of two or three procedures. They had either to build up a large gold contour stopping, which made a very nice piece of work, they could build up a gold stopping without contouring, to simply preserve the tooth—or they could cut off the tooth and fix a pivot tooth. In case they got a healthy nerve that was a very strong course to take, and one was, therefore loth to do it. In Mr. Headridge's idea they had a method by which they could restore the tooth without interfering with the vitality of the tooth. He (Mr. Hooton) was afraid, however, that the principal source of weakness in the procedure was the thinness of the platinum pin ; it was much thinner even than the ordinary platinum wire used in artificial teeth. Mr. Hooton proceeded to point out that where, a tooth had lost the terminal third, and the pressure was from inwards to outwards, that he thought the porcelain tip would hardly be strong enough to resist the pressure. There was also a difficulty in obtaining a body when fusing at a lower point than the mineral tooth, which would unite the porcelain tip and the natural tooth satisfactorily. It also seemed to him that the pins were much too thin and small to resist the force brought to bear on them. He would certainly expect that in a shorter or longer time—more probably the former—that the pins would give way. He would like the question as to their durability answered. In regard to the other demonstrations, Mr. Simms' was a most ingenious method of rotating twisted incisors. He would, however, like to ask how the method would act when, as was generally the case, the teeth were overlapped and crowded. Mr. Dougan's demonstration with the electric mallet was excellent, and the instrument seemed to be almost perfect.

Mr. Simms, in reply, said the method used by him was specially suitable in cases where the teeth were crowded, and where the adjoining teeth were overlapped, and explained the method of procedure in such cases.

The President said that where he had room he used a thicker pin than he did in the demonstration in question. He also pointed out that from his experience he found that by using a low fusing body, he always got a perfect unity between the tooth and the mineral. It had never broken when proper care had been used in the operation. His experience in the use of porcelain tips had been such as to encourage him in their further use.

The proceedings then terminated.

STUDENTS' SOCIETY, NATIONAL DENTAL COLLEGE.

The Annual General Meeting of the above Society was held on Friday, January 13th, 1893. W. Robinson Humby, Esq., President, in the chair.

The Hon. Sec., Mr. Cecil Bascombe read the previous minutes of the last Annual General Meeting, which were confirmed.

The Chairman announced that no auditors had as yet been elected to audit the accounts for the past year. He proposed the meeting should elect two members of the Society, and that an Extraordinary General Meeting should be held the first Friday in February, before the Ordinary Meeting. this proposal having been put to the meeting was carried unanimously, and Messrs. Fisk and Faro were asked to become auditors both for the past and the ensuing year.

The election of officers then took place.

The Council proposed *for the Council* :—

Past Students—Messrs. Fripp, Cutts, and Prager.

Present Students—Messrs. Beverley, Rowe, and Tice.

Messrs. Johnson and Patterson were now also proposed as past students, and Messrs. Jenkin, Bradshaw, and Reeve as present students.

A ballot having been taken the following were declared elected :—

Past Students—Messrs. Fripp, Johnson, Prager.

Present Students—Messrs. Beverley, Bradshaw, and Rowe.

The Council proposed as President, W. Rushton, Esq., and this nomination was carried unanimously.

The Vice-Presidents were then announced :—Messrs. W.R. Humby, and R. D. Pedley.

The Council proposed Mr. Charles Barrett, as Secretary to the Society ; Mr. MacFarlane as Treasurer, and Secretary to the Council ; Mr. Reginald E. Nicholls as Hon. Curator and Librarian.

No other gentlemen being proposed they were declared unanimously elected.

Mr. RUSHTON then proposed that copies of the Transactions of the Society should be sent to any member on an annual subscription of sixpence. This was seconded by Mr. Fripp, and carried.

Mr. NICHOLLS proposed that copies of the Transactions of the Society be sent to all the Dental Hospitals in the United

Kingdom annually. This was seconded by Mr. MacFarlane, and carried.

Mr. Cecil Bascombe proposed that all gentlemen whose names were still inscribed as members of the Society, but who for various reasons had been neglected, be written to, to see if they would continue to support the Society, and if so, that intimation of each meeting be sent to them. This was seconded by Mr. Nicholls, and also carried.

Mr. Humby then read his Valedictory Address, which we publish on page 171.

Mr. Fripp proposed, and Mr. Rushton seconded a hearty vote of thanks to the chairman for his past services. This was carried unanimously, and the meeting then adjourned.

Dental News.

THE DENTAL HOSPITAL OF LONDON, NEW BUILDING.

The Medical Committee of the Hospital having reported to the Managing Committee about twelve months ago their opinion that the accommodation at present at the disposal of the Hospital and School was quite inadequate to the demands made upon it by patients and students, a Sub-Committee was appointed to take into consideration the various aspects of the question, and if necessary to employ the services of an Architect. It was found impossible to get property at the back of the Hospital, and without that no alteration could be made, which would put an end to the present condition of the impossibility of getting from one part of the building to another without using a room as a passage.

The Architect, Mr. Keith Young, was quite emphatic in his opinion, that only by acquiring a new site and building a new Hospital, would it ever be possible for the Dental Hospital to possess a building worthy of its importance. He further pointed out that if a new Hospital was built upon a new site, there would at no time be a cessation of the very important work carried on at the Institution. Upon this advice the report of the Sub-Committee was drawn up and presented to the Management, and considered at ordinary and special meetings of that body during many months; and at the December meeting in 1892 it was unanimously decided to acquire property on the south side of Leicester Square, and to build a new Hospital upon that site.

The following, among other reasons, forced this conclusion upon a most careful management:—

That the waiting rooms were small, uncomfortable, and the men's department without proper sanitary accommodation.

That the operating rooms were small and inadequate to the demands made upon them, while the entrance into the Anæsthetic room was even dangerous.

That the dental appliance departments were unworthy of the Institution, both for patients and for the Students.

That the operating rooms were used for passages.

That notwithstanding the admirable facade of the present Hospital many parts of the building were only 12 feet deep.

That the Hospital having been constructed by the alteration of old houses, the whole of the sanitary arrangements left much to be desired.

That no room in the Hospital was fitted with hot and cold water.

That the Hospital was imperfectly heated.

That the Students had not proper accommodation in cloak room, lavatories, or sitting room.

That during the past 18 years there has been a large increase in the number of patients.

Cases treated in 1874, when the Hospital was removed to Leicester Square, 19,255.

Cases treated in 1892, 55,803.

The difficulty that appeared most insurmountable, and prevented the Committee deciding to build a new Hospital, was the question of funds, but when the Members of the Staff and a few friends promised nearly £4,000, it was decided upon the strength of this to make an appeal to the public.

A New Hospital and Site will cost quite £40,000, and the Committee venture to point out, in making this appeal, the generosity of the Staff and friends of the Hospital, which may be taken as a sign of the bona fides of those promoting the scheme.

The Dental profession have responded liberally to any appeal made to them for this Institution, and a percentage of the charitable public also; but considering the great and increasing usefulness of the Hospital, it has not received that public support which it deserves.

The building and fitting up a Dental Hospital with all necessaries will be very costly, and the annual expenditure in working such a charity is great, because of the cost of the materials used in each and every department.

While the poor are benefited by such an Institution, so also are the rich, for it is at such Institutions that dental practitioners are educated, who, when qualified, place their services at the disposal of the wealthy.

This Hospital has always been the pioneer in the progress of the profession, which position it is to be desired it shall maintain.

The following is the Report of the architect, Mr. Keith Young, as the result of an examination of the present premises of the Dental Hospital :—

"After careful study of the question I am forced to the conclusion that any scheme of reconstruction on the present site is out of the question, and that the true interests of both Hospital and School will be best served by rebuilding on a new site of sufficient area and with ample possibilities of lighting."

The members of the Staff and friends of the Hospital having in view the urgency for increased and better accomodation have promised donations (which may be paid in four annual payments), amounting to some £7,000, it having been decided to erect a new Hospital on a site in Leicester Square, the same side as the present Hospital.

The Dean, or the Secretary, will be glad to acknowledge donations of whatever amount.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

To the Editor of the "British Journal of Dental Science."

DEATH "UNDER" CHLOROFORM.

SIR,—I note in your Journal of Jan. 2nd, the report of a death "*under*" chloroform in which the heart was said to have been apparently healthy, and a P.M. shewed nothing to the contrary. It is also said that "the patient took the anæsthetic perfectly well, respiration continuing evenly and deeply, and at normal rapidity up to the time when the skin incision had to be made," or until full anæsthesia, when "*quite suddenly* and *without warning*," other than a few shallow "*gasps*," the patient became "*livid*" and the "*breathing ceased.*" The heart sounds were said to have been "inaudible," but it does not follow that it did not beat *at all* after the respiration ceased; the interval between the stoppage of the two may have been very brief in a patient presumably exhausted more or less by disease, but if there was "lividity" instead of pallor, it would point to "*asphyxia,*" and that there was stoppage of the respiration is certain, or why have recourse to artificial respiration at all?

It has been proved conclusively that chloroform has no direct action upon the heart, therefore it is misleading to speak of the accident as a "death *under* chloroform." If there was no asphyxia in the case, it might have been correct to say so, but here it was distinctly death *from* chloroform. It seems to me that in order to prevent confusion or mental obfuscation we *must* distinguish between deaths "from" and deaths "under" chloroform. If this patient had died of syncope, there would have been *pallor, not lividity.* We are not told what the condition of the heart's cavities was, but if there was lividity it would point to engorgement of the right side, and would suggest spasm of the pulmonary arterioles, and a back-rush of blood, produced in the first instance by an excessive slowing of the circulation and an accumulation of Carbonic acid and Hydrogen in the blood, which the lungs were unable to dispose of by combustion or aëration sufficiently rapidly, hence paralysis of the vagus and "accidental" asphyxia, brought about quite as much by this "slowing" of the circulation, as by the chloroform. But why should we watch and wait for the "*gasps*" that are only preliminaries to the dreaded asphyxia, before we can tell that we have narcotized the vagus? Mere "watching" tells us nothing. We want something more. We want oxygen at intervals throughout the administration to prevent this excessive "*slowing*" of the circulation, with all that it means, in the direction of *interference with the function of the lungs*, and unless this want is supplied we shall continue to have "*deaths from chloroform.*" No mere "*boldness*" of administration can avert trouble from this source, neither will any amount of experience and caution, unless the surroundings of the patient be of the very best. In my own practice it has required 800 cases, or thereabouts, to furnish me with even three of those "accidents" which if fatal, at once distinguish and extinguish a man. Happily, however, this has not yet been my experience, but upon the old lines of administration it might be any day. It may interest some of your readers to know that the three cases, just alluded to, occurred at the *beginning* and *end* of a long experience, as if to show how very little even *experience* does to avert this particular trouble. There is but one way of combating it, and this must be by some means having a physiological basis; no *ordinary* dilution, or mere *saving of chloroform* will meet the case, for we *must* give enough by whatever means, to produce complete anæsthesia, and to *maintain* it as long as may be necessary. Now the only remedy for this lurking danger is Oxygen administered by means of the "Oxy-Chloroform Inhaler," to which reference has been made in the *British Medical Journal* of December 31st, 1892.

Yours truly,
T. G. H. NICHOLSON.

27, Catherine Street.
Liverpool.

British Journal of Dental Science.

No. 603. LONDON, MARCH 1, 1893. Vol. XXXVI.

VALEDICTORY ADDRESS.*

By J. Howard Mummery, M.R.C.S., L.D.S.

Gentlemen,—In many circumstances of life it is important to pause now and then and take a retrospective glance over the ground we have already traversed. This I take to be the intention of a valedictory address, and in the few words to which I shall confine myself to-night, I propose to briefly review our work during the past session, and refer to any advances that have been made either at home or abroad. This has not been an eventful year in the Society, but the history of a Society, like that of a nation, is not only made up of serious crises, and events which leave their distinguishing mark on its history, but also by the daily routine of regular work. During this year I think we may be said to have done as good work as in the past. We devoted one evening to a discussion on irregularities of the teeth, confining our attention on that occasion to anterior protrusion of the upper jaw. Mr. David Hepburn opened the discussion, which was well maintained in a very full meeting. Such discussions, at all events once in a session, are, I think, a pleasant addition to our programme, and of practical value to our members.

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*Read before the Odontological Society of Great Britain.

Mr. Charles Tomes gave us a very interesting paper on the growth of the jaws, the result of a study of a series of models in the Museum of the Royal College of Surgeons, representing the same mouth from 4 to the age of 21. These models clearly show that "in the region of the jaw occupied by the temporary teeth, very little growth or change subsequently takes place, so that it comes to pass that the incisors, canines and bicuspids ultimately occupy an arch which hardly differs in either size or shape from that occupied by their predecessors." From an interesting comparison made with the skulls of the chimpanzee, ourang, and gorilla, Mr. Tomes demonstrated that this is an especially human character—considerable growth taking place in this region in these animals. Dr. Hewitt gave us an elaborate and interesting paper on his method of administering oxygen and nitrous oxide. He stated that by the employment of oxygen the symptoms of jactitation, stertor and lividity, so common with nitrous oxide alone, did not appear. The after effects, he appeared to consider, were not so satisfactory as with nitrous oxide. Mr. Storer Bennett's paper on "Some Mechanical Devices for the Retention of Artificial Dentures" displayed a very large amount of ingenuity in overcoming difficulties, and his hinged bands may no doubt prove to be of great value in some of those very difficult cases we all occasionally meet with. In December Dr. Sims Woodhead read us a paper on "Inflammation in Bone," in which several new and interesting points were presented, especially with reference to the action of leucocytes, and to the production of areas of calcification in degenerated tissue. This paper might suggest several lines of research to those interested in the pathological histology of the jaws.

Our usual casual communications have also well sustained the average of former years, both in number and importance.

Some important researches connected with the teeth have reached us from abroad during the past year. Dr. Morgenstern (of Baden) has described nerve terminations in dentine, enamel and cementum; he speaks of small bodies containing one or more nucleated corpuscles, in which he finds the terminations of ultimate nerve fibrillæ, which he considers he has traced back into the pulp, and which he describes as running in separate channels in the dentine. As, however, this is no more than a brief preliminary communication, was accompanied by no drawings, and has not been followed by any further statement, we must suspend judgment on this most important histological investigation until such time as the author sees fit to give to the world the full details in proof of his work. Another research by Dr. Carl Röse, of Freiburg in Baden, on the development of the teeth, is of considerable interest. By adopting Born's system of modelling, in which a solid model is built up in wax from a number of drawings of serial sections, drawn to the same scale and cut to a certain definite thickness, he is able to trace the course of the primitive tooth germ band in the fœtal jaw with much more certainty than is possible with single sections. His results seem to demonstrate that the temporary tooth germ does not give rise to the germ of the permanent tooth, as has been generally supposed, but that the tooth band grows obliquely backwards in the jaws, and after giving off a band dipping down to form the temporary teeth, continues growing backwards, and itself forms the permanent teeth. He has used the same method in examining the fœtal jaws of several classes of the mammalia with similar results. I had wished to have the models referred to with me to-night for presentation to our museum, but I have not received them from Germany in time. I hope, however, they will arrive before the next meeting.

With regard to matters during the past year more intimately connected with the internal working of the Society, I regret to say that we have received the resignation of our honorary treasurer, Mr. Thomas A. Rogers. We are all aware how invaluable Mr. Rogers' services are, and always have been, to the Society; no more efficient treasurer could possibly be found, or one who has devoted more time and interest to our welfare. It is with much regret that we receive this resignation, hoping, however, that Mr. Rogers will long continue among us to render the important advice his long experience enables him, and his kindness always prompts him, to give us. As you have heard by the Treasurer's Report, he leaves the finances of the Society in a flourishing condition, and I am sure we may congratulate ourselves on having obtained the valuable services of our late President, Mr. S. J. Hutchinson, to carry forward to future years this excellent balance sheet. It has been decided by the Council to have, in future, an annual official audit, in addition to the usual one by the auditors appointed at the December meeting. Two vacancies having this year arisen in the Trusteeship, by the death of Mr. Cartwright in 1891. and the resignation of Mr. Barrett, Mr. Forsyth and Mr, Alfred Woodhouse have kindly consented to act with Sir Edwin Saunders as trustees. The Council have this year undertaken the important work of revising their resolutions from the commencement, and the Sub-committee appointed for the purpose has devoted much time and attention to the matter, several prolonged special meetings of Council having been also held for the same purpose. This revision has involved an unusual amount of work for our honorary secretary to the Council, which has been carried out in such a thorough and efficient manner, that I am sure the members of the Council will wish me to take this opportunity of expressing their appreciation of those services, which have involved, among other things, the preparation of a perfect volume of Minutes.

We have this year also taken the measure of copyrighting our *Transactions*, and decided that a list of exchanges shall be published yearly. As you are aware, Gentlemen, we have been this year in the condition of tenants under notice to quit, our landlords, the Dental Hospital of London, having been considering the advisability of increasing the hospital accommodation ; but we have recently received an assurance that our eviction is not imminent, and that circumstances may admit of our still retaining our connection with the Hospital. Our list of new members for the year is an encouraging one. Thirty ordinary members have been elected, and one honorary member, and there has been one readmission. We have nine resignations and three cases of removal of members for non-payment of subscriptions. We have also, as you have heard, had sixteen new nominations read this evening. It is my painful duty to have to record a good many losses by death among our members during the past year. In Mr. Vasey we have lost an old and valued member of the Society and a former President. In Mr. Felix Weiss we have lost an enthusiastic worker for our Society, who served many years on the Council, held the offices of secretary and president, and for several years most efficiently fulfilled the duties of librarian. Among our list of deaths we must also number Mr. A. Fothergill of Darlington, Mr. H. A. Bevers, Mr. Cooke Parsons, and Mr. T. M. Kelly. Two former members of our Society, Mr. Richard White, of Norwich, and Mr. Henry Moon, have also passed away. Mr. Moon was a former Vice-president, and was dental surgeon to Guy's Hospital, and a member of the Examining Board of the Royal College of Surgeons. We have also to record the decease of an honorary member, Dr. Alfred Carpenter, and as your representative, Gentlemen, I was invited to attend the funeral of a very distinguished honorary member of our Society who has this year also passed away. Professor Richard Owen has long occupied a prominent position in the scientific world, both here and abroad; the great industry and wide grasp of scientific subjects which led him to such just and accurate conclusions in palæontology and comparative anatomy point him out as one of the most remarkable men of the age. As a comparative anatomist, Professor Owen occupies a foremost position in the century. He never was willing to accept the doctrine of natural selection according to the views of Darwin and Wallace, being wedded to his own theory of archetypes, but this was no hindrance to an amount of accurate work in all departments that is absolutely astonishing. Some idea of a part only of this work may be obtained, when we remember, as stated in a recent notice in the *British Medical Journal* that the list of his scientific papers in the Royal Society's Catalogue occupies twenty-eight columns. To us, as a profession, his labours are especially interesting, for one of his greatest works is his "Odontography," consisting of two quarto volumes, containing 168 plates, a book which is a remarkable example of accuracy. It is astonishing that with the imperfect methods of investigation known at the time, he should have produced a work which still stands alone as the authoritative text book on the subject of which it treats. As an example of his accurate knowledge and faculty for correct deduction may be mentioned the foreshadowing of the discovery of the fossil birds of New Zealand. From a small fragment of a long bone, which did not include the articular extremities, he stated his belief that a large bird of the ostrich family, but of a heavier build, would be found in New Zealand. The discovery of the numerous remains of dinornis within three years fulfilled his prophecy in every particular. Professor Owen's discovery of the toothed odontopteryx in the London clay, may also be said to have foreshadowed that most interesting discovery of the toothed birds of Kansas, by Professor Marsh, of Yale College, and to have perhaps unconsciously helped forward the theory of natural selection, by affording one of the first important indications of the descent of the birds from reptilian forms. In the extensive biographies which have lately appeared, you will have seen fuller particulars of this most interesting life; but I have purposely referred more to those researches which bear upon our special subjects.

It is pleasant to turn from the sad episodes of the year, to notice an event which had just taken place in Paris, in which another celebrity has just received, on his seventieth birthday, an ovation worthy of his fame and of the cause of science which he represents. In the reception given to M. Pasteur, we have "a date in the history of science." We all know how Pasteur, from his studies in chemistry and fermentation, gradually built up the foundations of the modern knowledge of the causation of infectious diseases. We see how, not contented with scientific demonstration, he has carried the practical results of his discoveries into all departments of application. With M. Pasteur science and practice have gone, as they always should do, hand in hand. Sir Joseph Lister, in addressing M. Pasteur, said:—"Infectious diseases constitute the great majority of the complaints which afflict the human race; you can therefore find no difficulty in understanding why medicine and surgery hasten on this solemn occasion to lay at your feet the deep homage of their admiration and their gratitude." While so many have passed away in the full vigour of their work, it is pleasing to see the great scientist, who has reached his threescore years and ten, receiving the acknowledgments of the whole scientific world, and preparing, when his own work is done, to pass on what he can to the younger generation, who will see results of his labours, at which we can now only vaguely guess.

The time has now come, Gentlemen, when I must take leave of you as your President. Permit me to tender you my thanks for your forbearance towards my many defects, and to thank you most warmly for the cordial support you have at all times given me. In resigning the chair to the gentleman you have this evening elected as your President, I know that you will have an officer who will devote all his energies to the interests of the Society, and under whose guidance, I am sure, you will have a most successful session. The excellent assistance which I have at all times received from the honorary secretaries deserves my warmest acknowledgments, and the anxiety which I felt on undertaking this most important post has been to a large extent relieved by their effectual help, and by your kindness and consideration, upon which I shall always look back with pleasure.

INAUGURAL ADDRESS.*

By W. Rushton, L.D.S. Eng.

Gentlemen,—In addressing you for the first time from this chair, I must beg to thank you for the honour you have done me in electing me your president for this year. It is with great diffidence that I accept the post, although I know that I shall have not only your hearty co-operation in making this year as successful as any of its predecessors, but also your kind indulgence for any short-comings of my own.

The objects of our Students' Society are identical with the objects of the profession to which we are proud to belong, namely, mutual help and instruction, the advancement of all that elevates our calling, and the bitterest animosity to everything that tends to degrade it. The furtherance of these objects is dear, I am sure, to all our hearts, and we can carry them out in our limited way, by attending our Society's Meetings (even at some personal inconvenience) by bringing forward objects of interest (no matter how insignificant they may appear to us, for nothing is really insignificant) by reading up the subject of the evening, before coming here (and so being prepared to take an intelligent and interested part in any discussion, or to ask questions) by inducing your fellow Students to come, and last, but not least, by reading papers yourselves.

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* Delivered at the Students' Society, National Dental Hospital.

I am glad to say that the list of papers promised is a very good one.

Mr. Glassington gives us a paper on Epulis, the diagnosis and treatment of which is a subject of no little importance to us; Mr. Farmer warily promises us "Odds and Ends of Practice," thus leaving himself a free hand. I have no doubt he is preparing something well worth our attention. Mr. Roughton, whose last lantern lecture is fresh in the minds of all of us, has promised us another; "On the Bacteria of the Mouth," which will be eagerly looked forward to. Mr. Nicholls has chosen the field of Comparative Anatomy and will give us "The chief group characteristics of the Mammalia." Materia Medica will also usefully claim our attention, as Mr. Tice will read "A few notes on Dental Preparations for the Surgery," while the laboratory will, I have no doubt, be ably treated by Mr. Reeve in "Workroom Notes." Lastly, Mr. McFarlane will read a paper on "Obturators," and I hope that this and other papers will be largely illustrated by cases and specimens, as these make the paper much more interesting.

Now while carefully avoiding the *role* of "heavy father,' for which I am not suited, there are one or two words I should like to whisper to those Students who have promised papers Do not put off the preparation of your paper; start at once. Besides the stimulus of the Society's Prize, the great stimulus will be the wish to do your work thoroughly and handle your subject in a masterly manner. When you have consulted your text-books, and drawn up a rough plan of your theme, you will be surprised how new lights and ideas come to you out of your everyday work. You will become saturated with your subject, your ideas will grow, and the result will be a paper that shall be a credit to yourself and a pleasure to your hearers.

In glancing over events of the past year, you will have observed that the tendency to give a more prominent place to the mechanical portion of our work, has been marked. The Student has now a more or less searching examination at the College of Surgeons in mechanical work, and this of course will give a great stimulus to the more thorough learning of this important branch of our work. Of late years, the surgical portion of our art has received, what I conceive to be, an undue share of prominence, and the mechanical portion has fallen into the background. A change from this sort of thing was inevitable, and now the anomaly of having no proper examination in mechanical work at the College of Surgeons, has been removed.

I am glad to say that in the entrance scholarships to our own School, the marks for theoretical and practical dental mechanics is greater than for any other subject, the framers of the Scholarships feeling that competency in this branch after pupilage ought to be duly rewarded, and incompetency to be strictly debarred.

And this brings us to the question as to whether the system of pupilage has, or has not, been found wanting. The system of apprenticeship is a time-honoured one. In years gone by, the artificer took an apprentice who served him for a term of years, was looked upon as one of the family, was always under his master's eye, and became the repository for his master's art and mystery, which he handed down in his turn. We have changed all that, in a great measure. How many masters personally superintend their pupils' work and see that when they leave them they are efficient craftsmen? And on the other hand, how many pupils are there who fill up their full term of mechanical work (especially those who go in for the diplomas in general surgery and medicine)? Let those who have the time and opportunity, take up these subjects, but always remember that the first essentials for a dentist are a highly trained eye, hand, and judgment, gained by practical work in the workshop and by operations in the mouth.

To obviate the drawbacks of the apprenticeship system, some gentlemen are starting a school of Dental Technology. The scheme is supported by many men of influence in the profession, and I am sure we shall all watch the experiment with kindly interest.

Another feature worthy of remark is with regard to the appointments, now becoming frequent, of dentists Parochial schools, with the sanction of the Local Government Board.

We may now hope that each of the children will possess a toothbrush and pass under the care of the dental surgeon every six months. When we consider that one school alone passes out annually into the army, navy, trades and domestic service, 150 boys and girls, we can see the enormous advantage of the ministration of the dentist, at the most critical dental period of the children's lives.

Ere long we may confidently hope to see dentists attached to different departments of the army, navy, post office, etc. At present, sound teeth are requisite for admission into these services, but once in, the teeth may go to rack and ruin without official interference. This anomalous state of affairs we may hope soon to see altered. As a preliminary movement in this direction, a certain number of Army Surgeons have been requested by the authorities to make themselves conversant with dental methods. Let us hope that they are not obliged to use the regulation dental instruments which (unless they have been altered recently) are fearfully and wonderfully made, and of a most antiquated pattern.

Another subject which has excited our interest during the past year is the proposed new teaching University for London. This will not be complete without a dental section, and I hope our dental schools will be represented.

It has been pointed out that whereas the entries of medical Students are increasing in the provinces where degrees could be obtained, those students attending London Schools had decreased in numbers. It seems only fair that the facilities for the ordinary student to obtain a degree should be as great in the metropolis as in the provinces, so long as a judiciously high standard of curriculum and examination is maintained all round.

Our dental schools have been making great progress and our dental education is as thorough as in any country in the world. We are not quick in accepting new and inadequately tried ideas, but when we find they are good, we work them up steadily and scientifically, accepting the kernel and discarding the shell. What I think we greatly need is a good series of post-graduate classes and demonstrations, and I trust that when our new building is finished that these will be an important and permanent feature.

Great activity is being shewn by all our dental schools, both Metropolitan and Provincial. The experiment at Guy's of incorporating a dental school in the body of the general hospital has, I believe, turned out a brilliant success, and I should not be at all surprised to see its example followed by others of our metropolitan hospitals. Certainly Guy's was more fitted for such an experiment than many others, because it was far away from the nearest dental school, and it had spare premises which could be thus utilised. The dental student is becoming a more important factor every year, and those hospitals which afford him a hearty welcome, and arrange his lecture hours, so as not to clash with his dental work, will reap the benefit. Our new hospital, situate as it is in Great Portland Street, close to the station, will be eminently convenient for gentlemen studying at St. Mary's, Middlesex, and University College Schools, and it is to be hoped that the lecture hours and demonstrations will be arranged on a plan of mutual convenience, so that no clashing will take place, as I fear has been the case in the past, and which possibly still exists.

The London Dental Hospital is conveniently situated for students who are attending Charing Cross, King's College, and Westminster, and I am glad to see that it is going to be greatly enlarged, and its sphere of usefulness correspondingly augmented.

The three dental institutions I have named are doing an incalculable amount of good, but they can only combat a fractional portion of the dental misery suffered by the poor of our huge metropolis, and it is to be hoped for the sake of the public weal that the example of Guy's will be followed, or that new Dental Hospitals be erected, to stem the ravages of dental caries, and the almost as terrific ravages of the dental forceps.

Gentlemen, this is the last session of this Society in our old building. Let us all strive to make it a good one. We shall before long I hope occupy a room more worthy of our meetings, and with every convenience for lectures and demonstrations, but to many of us there will be a pang of regret as we think of the old times, and of faces no longer with us. But change is the inevitable accompaniment of progress, and our change will be one infinitely for the better. Then let us work on for the credit of ourselves, our school and our profession, feeling that our calling is a high one, and our privilege in aiding to alleviate human suffering, one that we greatly prize.

ANÆSTHETICS.*

By Percy Edgelow, M.R.C.S., L.R.C.P.

Lecture III.

There have been various explanations of the action of the different agents employed for inducing anæsthesia, viz., that the effect is due to interference with the oxygenation of the blood, i.e., asphyxia, or to actual changes in the blood, or to anæmia of the brain, or finally a specific action on the nervous system, of the drug itself.

Everything tends in the present day to refer the anæsthetic state to the last named cause. Sir Humphrey Davy conducted a number of experiments on rabbits, cats, dogs, mice, and birds, introducing them into an atmosphere of nitrous oxide, over water or mercury. He found they could breathe it with facility for a short time, but that if they were detained in it for periods varying from two to six or seven minutes, according to the size of the animal, death invariably resulted. He further endeavoured to ascertain whether the deaths of these animals were due to the simple want of oxygen or to deliberate lethal properties of the gas itself. From a variety of experiments he concluded that they were due to peculiar changes in the blood, caused by the nitrous oxide. He made a number of *post mortem* examinations of animals killed in an atmosphere of the gas and found the condition of the various organs differed from those in cases of death from Asphyxia. He carefully records also the effects of inhaling the gas produced on himself and a number of friends. The general conclusions he arrived at are that the gas causes stimulation, increased force of the circulation, pleasurable feelings, alteration of the organs of sensation, and in its most extensive action destroys life.

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* Abstracts of Lectures delivered at the National Dental Hospital, during the Winter Session, 1892-1893.

Several years later, in the sixties of the present century, we find its anæsthetic action explained by what is known as the Hyperoxygenation theory of Colton, which being roughly stated means an accumulation of oxygen in the blood from the supposed splitting up of the nitrous oxide, this accumulation giving rise to the apnœa present.

A little later Marcet explained its action as due to the splitting up of the gas into oxygen and nitrogen, the free oxygen causing the exhilarating effects, the anæsthesia being due to the formation of carbonic acid from the excess of oxygen.

Coleman rightly urged against Marcet's theory the following objections :—

1.—Nitrous oxide is a remarkably stable body.

2.—The analysis of respired nitrous oxide shews a certain amount of O, N, and CO_2 returned at first, no doubt from the residual air in the lungs. As respiration proceeds these diminish, whereas CO_2 ought largely to increase if it is formed largely in the blood.

3.—N_2O respired, collected, and cleansed from impurities will reinduce anæsthesia.

Both Frankland and Coleman came to the conclusion that N_2O was not decomposed in the system, but was returned as such. Their theory of its action, however, was that the anæsthesia resulted not from hyperoxygenation of the blood, but from the prevention of the normal oxygenation, *i.e.* asphyxia. Agreeing with these gentlemen in their proof of the fallacy of the hyperoxygenation theory, we must by the light of recent researches differ from their expressed opinion that the anæsthesia results from Asphyxia. Comparing the two, we find :—

In asphyxia there is true dyspnœa ; all the accessory muscles of respiration are called into action, inspiration and expiration are both in excess in the early stages leading on to a violent convulsive stage in which expiratory efforts are pronounced and finally exhaustion sets in with an occasional inspiratory effort preceeding total arrest of respiration.

In N_2O narcosis we find a different state of things. There is no true dyspnœa, respiration is unaffected at first and then simply somewhat quicker and deeper than usual, finally slowing down to complete arrest; if the gas be persisted in, this arrest occurring at a much earlier period than in the case of asphyxia. Also convulsions of any marked nature are only very occasionally present.

In asphyxia there is a rapid rise of blood pressure through the convulsive or expiratory stage, due to the venous blood acting on the vasomotor centre with contraction of blood-vessels, the heart's beat being considerably increased in frequency at first, soon, however, becoming slower and more forcible.

In N_2O narcosis, blood pressure is diminished, the tidal wave being lost, the dicrotic wave more marked and the blood-vessels dilated. Anæsthesia is much more rapidly induced with N_2O than occurs in asphyxia.

Buxton has also found that the cerebro-spinal axis, diminishes in volume in asphyxia, whilst it increases under N_2O.

But more convincing still is the method of giving N_2O, with O, doing away with any asphyxia. Paul Bert was thus able to obtain a prolonged and satisfactory anæsthesia supplying O, for the maintenance of vitality.

Lastly, a most excellent anæsthesia can be maintained by giving an occasional breath of air. We are thus forced to the conclusion that Nitrous Oxide gas produces anæsthesia *per se*, having intrinsic narcotic properties of its own.

As it passes into the blood through the capillaries of the lungs, some of it is probably absorbed by the watery part of the blood, but the major part is stated by Buxton to be in combination with its albuminous principles.

Now let us study its effects on the different parts of the system.

Referring to the circulation, we find that arterial blood shaken up with N_2O becomes darker, and if examined spectroscopically presents merely the one broad continuous spectrum of deoxygenised blood, and not the two dark bands between D and E of arterial blood. The heart beats more quickly, the pulse in most cases being faster by twenty to forty beats per minute up to the deeply anæsthetic stage. This is no doubt often emotional. During deep anæsthesia, especially when muscular spasm is marked, it is often imperceptible, due in great measure to the pressure of the contracting muscles on the vessels themselves. During recovery it becomes slower and firmer. The bloodvessels begin to dilate after some inhalations of the gas. This has been observed by Buxton in the web of the frog's foot and on the surface of the dog's brain. The lividity present in the human being also demonstrates the fact. The bloodvessels of the splanchnic area, however, contract. Mouat and Buxton have recorded some careful sphygmographic pulse tracings showing a lowering of blood pressure.

Passing on to the respiration, we find normal breathing at first. In about fifteen seconds the respirations are becoming quicker, still regular and as a rule shallower. This maintains for nearly half a minute when they tend to become slower and deeper. In a few seconds longer they become shallower, intermittent, and still slower, and finally stertorous. By stertor I do not mean that snoring noise due to vibrations of the soft palate or post-nasal adenoid growths, which often appears before the patient is unconscious, but the deep gutteral sound so obviously connected with the glottis, and which only appears as unconsciousness becomes more or less profound. The vibrations of the aryteno-epiglottidean folds are the cause. The irregular catch which often occurs in the breathing as anæsthesia ensues, Hewitt attributes to spasmodic elevation and depression of the larynx or to irregular spasm of the thoracic and abdominal muscles. With regard to changes in the respired gases we find as N_2O is being breathed, less CO_2, less O, and less N are given off with an ever increasing percentage of N_2O in the expirations.

On the nervous system anæsthetics produce changes in the following order :—

On the cerebrum first, interfering with volition and causing hallucinations.

Next on the cerebellum with a loss of power in the regulation of motion.

Then on the sensory part of the cord, next on the motor part of the cord, and finally on the centres in the medulla.

In order to determine the physical changes the brain and cord manifest under nitrous oxide anæsthesia, various experiments have been conducted by Amory, of New York, Buxton, and others. From these it appears that the respiratory pulsations of the brain become more marked and quicker at first, and its bright pink colour gradually turns to a darker purplish tint. Its substance swells up into the trephine hole made for observation, and as the gas is pushed the brain bulges out to a level with the upper edge of the skull, the pulsations then ceasing. On the admission of air to the lungs the cerebral substance recedes and the pulsations reappear. The spinal cord exhibits a similarly swollen condition under the influence of the gas, resuming its normal dimensions when air is inhaled. This general increase in bulk of the nervous system is due to dilation of the blood-vessels with concomitant slowing of the circulation.

The following functional nervous changes are often present; excitement, hallucinations, exaggeration of the special senses, pleasing dreams or otherwise, erotism and hysterical manifestations. Special centres in the spinal cord exhibit a marked influence under the gas; superficial reflexes are soon abolished, ankle clonus is often present, micturition and defæcation may occur, and sexual excitement is often apparent.

Emprosthotonos, opisthotonos, muscular rigidity and jactitations are all more or less cord phenomena.

The dilatation of the pupil that occurs is due either to paralysis of the third nerve, which you know supplies the sphincter, or to stimulation of the sympathetic, which is distributed to the radiating fibres, or to the action of the gas on the special oculo-pupillary centre in the medulla.

The foregoing is a summary of the effects of nitrous oxide on the system.

Believing then, gentlemen, that the gas acts by its own inherent power, that it possesses specific anæsthetic properties, and that its effect is not due to asphyxia or simple deprivation of oxygen, our efforts should be directed to giving a full and free supply of the pure gas, allowing at the same time an escape of expired gases. From this we reason that the supplemental bag, which allows a forward and backward breathing of respired gas, is physiologically wrong in its inception and I find its effects to be detrimental in practice.

There have been a few recorded deaths in connection with the administration of the gas, and you will gather, as I relate them, that they appear in general to be attributable to circumstances apart from the mere effect of the nitrous oxide.

PHYSIOLOGICAL EXPERIMENTS WITH GREAT MAGNETS.

At the Edison Laboratory Dr Fred Peterson and A. E. Kennelly have sought to prove that no therapeutic effects are resultant from the application of magnetism to the human system. For the purpose of experiment the armature was taken from a dynamo, and in the cylinder formed by the inner ends of the set of powerful converging field magnets a dog was confined and kept for a period of five hours. The intensity of these magnets was from 1,000 to 2,000 c.g.s. lines to the square centimeter. At the end of the time mentioned the dog was set at liberty, and beyond his apparent joy at thus being set loose the operation did not seem to affect him in the least.

A boy was also confined for a short time in the same position and was also uninfluenced. Several other experiments of like nature were made. Dr. Peterson and Mr. Kennelly conclude from their experiments that the human organism is in nowise affected by the most powerful magnets known to modern science.

Scientific American.

British Journal of Dental Science.

LONDON, MARCH. 1st, 1893.

DENTAL POLITICS.

It is interesting to find that whilst the general political atmosphere is heavy with National differences of opinion, there seems to be an indication of unusual disturbance in the comparatively tranquil attitude adopted by the British dental profession for some years past.

From expressions we have met with it would appear that at all events some practitioners have no clear idea as to the different opinions held, and for such it may be well to point out that there are two distinct and opposite schools of malcontents. In the first division are to be found those who are anxious that the General Medical Council, as the recognised Body in control of the Dentists' Register, should "purge" the profession from advertisers. In the other class are to be placed those who wish to restrict, or even annul, the action of Dental Authority, as at present constituted. Whilst the earnestness of both parties may be readily discerned in their published communications, we may at the same time concede that their motives are equally conscientious, and under these circumstances our sympathy is with any, and all, who are anxious that the honourable standing of their profession shall be strengthened. The real difference of opinion will arise, of course, in connection with the methods advocated by which any improvement is to be brought about.

As is usual in the organisation of new departures, the names of the leaders become inseparably connected with them. In this way Mr. Blandy, of Nottingham, is associated with a petition to the General Medical Council asking th advertising dentists shall be considered guilty of infa conduct, and be dealt with accordingly. He has also appealed to the Medical profession in the columns of *The Lancet*. As far as we can learn, Mr. TRACEY, of Glasgow, is responsible for an attack upon the present Controlling Body, and is possibly prepared with some alternative scheme by which dental practice shall be regulated. We believe he trusts more to approaching members of Parliament than the medical profession. Meanwhile, the General Medical Council (which necessarily forms the pivot-point upon which these movements turn) will doubtless have the sympathy of many who, realising that progress to be sure, must not be too rapid, are ready to give the Council credit for a willingness to advance as fast as is consistent with the times.

The copy of a letter addressed to Mr. TRACEY by the Solicitor to the Medical Council, which appears in our correspondence, certainly seems calculated to allay the fears of those who were afraid that the apprenticeship, or pupil, system would be interfered with by the "warning" recently issued; whilst those who, like "A Blighted Student," think that they must retire entirely from the surgery to the workshop, will see that so long as there is no attempt made to run a practice by an unregistered man, the past position is practically unchanged. If our last-named correspondent has correctly indicated his arrangements there would seem no reason why he should be obliged to cease his studies or embark in the speculation he mentions. It seems to us that those who object to the warning must be in favour of allowing unregistered men to assume an attitude towards the public precisely as if they *were* registered. Does not this suggest that the objectors are averse to the regulation of dental practice? If not, what is the alternative? We can understand the desire for dental representation on the General Medical Council, and we believe that matters were until quite recently (and, we hope, still may be), tending to accomplish this. For those who think they would prefer the regulation (?) existing in the United States, we recommend a perusal of Mr. THOMAS GADDES' letter, as it well illustrates one phase of a condition of things which a study of the

American Journals shows is regarded by all the best practitioners as leaving much to be desired.

We shall continue to watch the development of the action being taken at home with great interest, and it may be just possible that a future amalgamation of the, at present, opposing parties may result from a failure to succeed in their desires. At all events we imagine there may be some who will change from one camp to the other.

A PHYSIOLOGICAL STYPTIC.—Dr. A. E. Wright has suggested that the knowledge of the processes of coagulation, which has been acquired by research might probably be turned to account in providing the surgeon with a styptic painless in application and inert with respect to the tissues. He proposes that an extract should be prepared from the thymus gland of the calf by a solution of carbonate of soda and chloroform. When almost the entire substance of the gland has dissolved in the alkaline fluid it should be strained through calico and have one per cent. of calcium chloride added. If preserved in a stoppered bottle to prevent the chloroform evaporating the styptic will keep for an indefinite time. It should be applied on a tampon to the bleeding surface and Dr. Wright has been able to arrest the hemorrhage after cutting across both a femoral and a carotid artery in a dog. The action of the styptic was assisted by compressing the arteries for one or two minutes.

THE HUNTERIAN ORATION.—Mr. Bryant, the President of the Royal College of Surgeons, found plenty to say in favour of Hunter, and said it well. Whether as a Thinker and Reasoner, a Biologist or a Surgeon, there was sufficient to place before the audience to justify the commemoration of such a wonderful man as John Hunter. In many other respects like a later great scientist, Hunter, like Darwin, was characterised by an extreme cautiousness, and a dread lest he might be led to publish any new thought before it was absolutely proved. Both men pursued the same Baconian method, were indefatigable collectors of facts, and possessed enormous patience. In the present day, when it is sought to restrict research and biological investigation, the orator did well to dwell upon the part played by Hunter as an experimenter. As such he was, according to the speaker, a king, and a model one. He never made an experiment without a definite object, although he thought that even misfortunes in experiments have brought things to our knowledge that were not, and probably could not have been, previously conceived.

REGISTRATION OF DENTISTS.—The Council of the London and Counties Medical Protection Society seems to have turned an ear of sympathy to the case of an Englishman who held an American dental Diploma, and yet was refused registration by the General Medical Council! With more zeal than discretion Mr. CHAS. S. TOMES was appointed, without his knowledge, to arrange a deputation to the Medical Council, and that gentleman found himself obliged to write to the *British Medical Journal*, (in the columns of which he first learned of his commission), to say that if he had been present at the meeting he would have furnished such information as would probably have put a stop to the idea, and that he heartily agreed with the course taken by the General Medical Council.

SUSCEPTIBILITY TO ARSENIC.—Dentists, in making use of arsenious acid, are more concerned in carefully avoiding local injurious effects of the small quantity employed in pulp struction, rather than in any constitutional disturbance
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from internal administration. Still, cases are from time to time recorded where patients prove very susceptible to extremely small doses, and it is as well to bear in mind the potency of this drug when used in the mouth, even in local application. Dr. Nicholson has recently reported an instance where a dose of three minims of arsenical liquor was ordered to be taken three times a day, immediately after food, and well diluted. After five doses, the patient presented a universal erythema, with much itching and some diarrhœa and suffusion of the conjunctivæ. There was no furred tongue or other sign of arsenical poisoning, and the temperature was normal. The rash disappeared when the arsenic was discontinued.

INJECTIONS AGAINST CHOLERA.—One of the most important results of bacteriology has been the discovery that microbes may change their characters, and may be transformed, by artificial means, into vaccines of fixed and ascertained power. When, therefore, the germs causing a disease are discovered, substances can be elaborated as protectives. Following upon the lines of inoculation to prevent hydrophobia, we now have subcutaneous injections proposed as a means of procuring immunity from the poison of cholera. M. HAFFKINE, during his recent visit to England, innoculated two gentlemen, one of whom was proceeding to a dangerous part of Persia, and the other is a medical officer of health, near London. Besides giving demonstrations at Netley Hospital, M. HAFFKINE read a paper at the Laboratories of the Royal College of Physicians and Surgeons. He is now intending to study Cholera in India.

Abstracts of British & Foreign Journals.

COLLAR CROWNS AND PREPARATION OF ROOTS.

By C. W. Jones, D.D.S.

From a hygienic point of view there is yet room for great improvement, and any one will be convinced of this fact by looking at the turgid condition of the gums where a crown has been worn for a few years, or even in many cases a few weeks. This is especially true with a great majority of collar crowns. The author thinks that ninety per cent. of gold crowns or porcelain crowns with collar which are a success so far as appearance and being firmly and permanently fastened to the root is concerned, are a failure with respect to leaving the natural parts, in which they come in close contact, in a normal and healthful condition. No one will question the superiority of this kind of crown in point of strength as well as protection to the root from further decay. Yet dentists of high authority predict that these crowns will not be put on so universally in the future as they have been in the past, for the reason of this inflammation produced at the gingival margin of the gum from the collar. A condition which finally results in absorption of process, pyorrhœa alveolaris, loosening of the teeth and their ultimate destruction.

It is very strange that so little has been said or done on the subject of properly preparing roots for the reception of crowns and a fine adjustment of the band at the gum margin with a view to keeping the gum and contiguous parts in normal and healthful condition. Nothing in dentistry demands finer manipulation. If we take a practical consideration of the subject we will see that our knowledge of anatomy, histology and pathology, as well as mechanical and artistic skill, will be called into play and is necessary for a correct treatment of the case in hand and a proper performance of the operation.

The most frequent causes leading to failure of collar crowns may be enumerated as follows :

1. Imperfectly prepared roots. 2. Low carat gold for band. 3. Roughly finished or porous band. 4. Band impinging on peridental membrane. 5. Failure to follow gum margin evenly. 6. Faulty articulation. 7. Failure to restore anatomical contour.

If we bear in mind the anatomy of a tooth we see that the exposed portion of dentine that projects above the gum is entirely covered by a shell of enamel, which is also carried a little below the margin of the gum and is there overlapped by cementum. Now in restoring a broken down crown we cannot do better than imitate nature as closely as possible. The enamel should be entirely removed under the gum, leaving the cement uninjured and allowing our gold band to run up under the gum and the sharp edge overlapped by the cement, as was the case with the natural enamel. In that case we would have no irritation whatever, provided our gold is twenty three carat fine and smoothly polished.

In many cases it will be necessary to not only remove all all the enamel, but also cut into the dentine leaving a shoulder, then a band of considerable thickness can be used, thus giving additional strength and rendering a more perfect contour possible.

The Dental Review.

Reports of Societies.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The usual monthly meeting of the above Society was held on Friday, February 3rd. Mr. W. Rushton in the chair.

The minutes of the previous meeting having been read by the Hon. Sec. and confirmed,

The President gave the usual form of welcome to the visitors present.

CASUAL COMMUNICATIONS.

Mr. J. T. Fripp brought forward two cases. (1.) A model showing the left upper permanent canine fully erupted between the first and second bicuspids. (2.) An interesting case of protrusion of the upper front teeth a full half-inch, in a boy, age 12 years. In profile this gave him a very peculiar appearance, and Mr. Fripp much regretted that he did not have a photograph taken before beginning the case, as the differe in his appearance now that the operation is completed very marked. The deformity was partly caused by th shortness of the lower jaw, in which a bicuspid on either side is missing, whether extracted before the patient was seen, or never erupted, was not certain. On examination, he found that the lateral incisors were decayed, so decided to remove them. This, however, while affording perhaps sufficient space for the retraction of the centrals would not allow room for the canines which were near eruption. The first bicuspids were also, therefore removed, and then the appliance was made which accompanied the model. This appliance required no alteration during the four months that the case was in hand, except the occasional shortening of the rubber band, and the cutting away of the plate in advance of the moving centrals. The plate was made of dental alloy and gold plated, with wings extending round the buccal surface of the gum on either side from the back to meet and join the tongue of plate in front of the second bicuspid. On each wing as high up as possible was soldered an ordinary swivel head, over which the moveable buckles which hold the rubber were hooked by means of a hole and slot. A cap of plate was made to fit the faces of the centrals with a thin slip passing between them to prevent lateral motion of the cap. The cutting edges of the incisors were also covered by the cap to prevent upperward displacement. On the front of the cap, as near the cutting edges of the teeth as possible, was a loop of plate through which the rubber band was passed, before being clamped at the sides. Constant backward traction was thus exerted on the centrals, and the side attachments being, as already said, placed as high as possible, a slight *upward* force was at the same time exerted which prevented the usual lengthening of the teeth in moving, and made them in this case *shorter* rather than longer at the end of the operation. The method and result might be seen by study of the models and of the appliance itself. Mr. Fripp thought that the canines, when erupted, would fill up the spaces, and promised to bring the case forward again when completed.

Mr. Cutts spoke of the condition of spongy gums which was often seen in regulation cases, and asked which was the best treatment in such cases.

The President thought that the gums might be scarified and an astringent mouth-wash applied, this was only necessary in severe cases, ordinary cases usually righted themselves.

The President then gave his Inaugural address, which we publish on page 200.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Annual General Meeting, January 9th, 1893. Mr. J. H. Mummery, M.R.C.S., L.D.S., President, in the chair.

The Minutes of the preceding meeting having been read and confirmed,

The President declared the ballot opened. Messrs. F. C. Rilot and Percy Smith were appointed scrutators.

Messrs. David Thomson and H. W. Messenger signed the Obligation Book, and were formally admitted to membership by the President.

Mr. Harold Stoner, L.D.S. Eng., Tylney House, 110, Queen's Road, Brighton, was ballotted for and elected a Non-resident Member.

Mr. Robert Hepburn was proposed by the Council for Honorary Membership, and his election carried by acclamation.

The following were nominated before the Society:—Charles Francis Peyton Baly, L.D.S. Eng., 140, Harley Street, W. (resident); Edward John Blain, L.D.S. Eng., 35, Moore Street, Chelsea (resident); Thomas Herbert Clarence, L.D.S. Eng., Chase Side, Enfield (resident); Ernest Gardner, L.D.S. Eng., 139, Victoria Street, W. (resident); Saville Henry Hayward, L.D.S. Eng., 12, St. Anne's Terrace, Circus Road, St. John's Wood (resident); George Northcroft, L.D.S. Eng., 4A, Portman Mansions, W. (resident); Edward John Preedy, L.D.S. Eng., 1, Hanover Square, W. (resident); Edward F. Smith, L.D.S. Eng., 176, Brixton Road, S.W. (resident); Herbert John Stevens, L.D.S. Eng., 72, Jenner Road, Stoke Newington, (resident); Charles J. Tisdall, L.D.S. Eng., 2, Heathfield Road, Acton (resident); Douglas Phillimore Gabell, L.D.S. Eng., 47, East Street, Brighton (non-resident); William Henry Goodman, L.D.S. Eng., Palace Gate, Exeter (non-resident); Arthur Curling Hope, L.D.S. Eng., Rockholme, Hastings (non-resident); Hubert L. Curling Hope, L.R.C.P. Lond., M.R.C.S., L.D.S. Eng., Rockholm, Hastings (non-resident); Gavin Martin, L.D.S. Eng.. 7, Manningham Lane, Bradford (non-resident); Ernest Weston, L.D.S. Eng., High Street, Ventnor, Isle of Wight (non-resident).

The Treasurer (Mr. Thos. Arnold Rogers) in presenting his Annual Report, said that as the members would be aware, it was usual to prepare two balance sheets, one showing each item of receipt and expenditure, which did not convey very much information, and the other, which is specially subdivided under different heads, giving a fairly good idea of income and expenditure.

The Report was then read and passed.

The President spoke of the Report as most satisfactory, and said he felt that all the members would share his regret that it was the last one Mr. Rogers would present to them, as he felt compelled to resign his office.

The Librarian (Mr. ASHLEY GIBBINGS) stated that he had since the last meeting received three antique books of interest from Mr. Alexander, and had acquired by purchase Professor Crookshank's "Manual on Bacteriology." He then proceeded to read his Annual Report.

He said: I have the pleasure to report, Mr. President, that during the year just passed, several books and papers have been presented to the Society, which I have duly acknowledged at the monthly meetings. We have also added a few books by purchase, among which I may mention three upon pathology and bacteriology--a subject in which many of us are specially interested at the present time—viz., "Practical Pathology," by Dr. Sims Woodhead; "Manual of Bacteriology," by Professor Edgar Crookshank, and the numbers, for 1892, of the *Journal of Pathology and Bacteriology*. The number of members who have borrowed books is eighty-five—a slight increase over last year—and of students, nineteen. I would once again remind members of the importance of returning books, and especially new works, as soon as they have finished with them, that others may also have the opportunity of consulting them. The Library is open for the use of members on Wednesday evenings from six to eight o'clock, and also on the night of our meetings, when the Journals and *Transactions* which have been received during the month are on the table. I append a list of the Societies and Journals with which we exchange *Transactions*, and of the Journals for which we subscribe. We exchange with the Royal Society of London, Royal Institute of Great Britain, Royal Dublin Society, Smithsonian Institute, *International Dental Journal*, *Guy's Hospital Reports*, *Journal of the British Dental Association*, *British Journal of Dental Science*, *Dental Record* and the German Odontological Society. We also present our *Transactions* to the Royal Medical and Chirurgical Society, Royal Microscopical Society, and the Medical Society of London, and we are at present in negotiation with these Societies for an exchange of *Transactions*. We subscribe for the *Lancet*, *Dental Review* (Chicago), *Journal of Anatomy and Physiology*, *and Journal of Pathology and Bacteriology*. In conclusion, I beg to remind members that there is a Suggestion Book on the Library table, in which they may enter the name of any book which they desire to be purchased, for the consideration of the Council.

The Curator (Mr. **Storer Bennett**) said that having acknowledged and commented on the specimens at the time they were presented, there was nothing to add to his previous statements. As in former years, the additions to the Museum during the past session were placed on the table for inspection. Owing to the uncertainty of the Society's tenure of their present premises, the specimens had been temporarily stored away instead of being exhibited in their cases; but if any members wished to examine such unexhibited specimens every facility would at all times be offered them. For the greater convenience of visitors to the Museum, some seats had been provided, and it was hoped they would be found a convenience to those studying the collection.

The Reports were then duly passed.

The **President** then called upon Mr. Ackery for his Casual Communication.

Mr. **Ackery** said that it might be within the recollection of some of the Members that in March, 1891, he had shown an upper bicuspid tooth which he had extracted from the mouth of a medical man, about 33 years of age. The tooth, which presented caries in the crown, had partially erupted high up towards the outer side of the alveolus; when extracted, the root appeared only about two-thirds formed, it being difficult to say whether the diminished size of the root was due to absorption or arrest in development. Mr. Ackery had at that time asked for an expression of opinion as to the cause, but no one present spoke on the subject. With a view to settling this question, Mr. Colyer had kindly made a microscopical examination of the tooth, and would report what he had found.

Mr. **Colyer** said that six sections of the tooth were obtained, four being transverse, the remaining two being cut vertically, so as to include the end of the root. These latter showed well-marked Howship's lacunæ, pointing to the fact that in all probability the loss of tissue of the root was due to absorption. The transverse sections showed that the d contained in its midst true bone. In the first, namely, that taken near the crown, two or three small canals were seen containing tissue exactly like bone. In the section taken just below this, a large portion of the dentine had been replaced by a tissue, very irregular in character, but being at places of a distinctly osseous character. To the side of this, but yet separated from it, was another oval space containing distinct osseous tissue. In the third section, these two spaces had fused together, and the first had progressed much further into the dentine. The tissue towards the pulp chamber still retained the irregular character spoken of above, but in the portion most distant from the pulp, there was distinct osseous tissue with well-marked Haversian systems. The next section, namely, the fourth, showed a still greater portion of the dentine replaced by true bone, the irregular tissue only being apparent on that part nearest to the pulp chamber.*

That the bone did not form part of the original structure of the tooth seemed, Mr. Colyer thought, probable. First, because the margin of it was distinctly cupped, or in other words, showed Howship's lacunæ, and again, in the fourth specimen, there were a few dentinal fibrils amongst the bone. It seemed, therefore, probable that the dentine had been absorbed and replaced by bone, the greatest changes taking place towards the base of the tooth.

The second specimen was taken from a lower wisdom tooth which was misplaced, so that no portion appeared above the gum. This tooth was treated by the Weil process, and showed, like the preceding one, absorption of the dentine and re-deposition of bone: but the latter was not so well formed as in the preceding specimen. In looking over the literature bearing upon the question of the presence of bone in dentine, or its occurrence in teeth as a new formation, Mr. Colyer had been unable to find an account of any specimens showing the condition so definitely as that shown in the accompanying illustrations.

Salter, on p. 70 (fig. 49) of his "Dental Surgery," figured a specimen, the character of which it was doubtful to be quite certain about from the drawing, but it certainly appeared more like a section containing a large number of pulp stones than Haversian systems, and the text referring to the specimen also seemed to point in the same direction, for Mr. Salter said:

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* Two lantern slides were shown, and the specimens themselves were exhibited under the microscope.

"Usually, however, there are many systems of secondary dentine surrounded by and adherent to the primary dentine, as seen in the accompanying illustration."

The only other reference to the subject, was from Wedl, and in his "Pathology of the Teeth" he referred to the subject in the following words :—

"I have met with a few cases only of true new formations of osseous substances within the parenchyma of the pulp. They occurred in the pulps of milk teeth which were undergoing resorption, and one of these cases is reported by Heider and Wedl. Upon the posterior surface of a milk incisor which was extracted there was a deeply-grooved breach of substance, about six millimetres in length, extending from the neck of the tooth towards the root, and the corresponding portion of the coronal and radial pulp was denuded. The contents of the nerve tubes of the latter had undergone a molecular degeneration, and the nerve tubes themselves presented in places a shrivelled appearance. Within the pulp, which was tinged with blood, a firm lamella was found united with the tissue of the pulp, about two millimetres in length and one millimetre in breadth. Upon very close examination of the structure, it was found that the central, more compact portion, was ossified, while the marginal portion was composed of aggregations of minute calcareous grains. The lamella contained, as is the case generally with young osseous plates, several oval foramina for the transmission of blood vessels ; very distinct bone corpuscles, which were in clusters, were furnished with short processes, and on the whole bore a strong resemblance to those of a young formation. The new formation of osseous substance in this case, was due to the irritated condition of the pulp engendered by its exposure."

The **President** said that Mr. Ackery had kindly given him the opportunity of looking at the sections, and absorption cavities could be very plainly seen. There seemed to be true bone forming. He believed that Mr. Tomes, a good many years ago, contributed a paper to the Society on an abnormal condition of the teeth in a grampus ; he (Mr. Mummery) had not had time to look it up, but he thought it was a case of occurrence of bone in dentine.

Mr. F. J. **Bennett** considered that Mr. Colyer had scarcely done justice so Mr. Salter's specimen. There were really two figures of the specimen in Mr. Salter's book, one of them showing three small holes on the exterior of the tooth ju below the neck and passing into the pulp cavity. In addi to the testimony of so careful an observer as Mr. Salter as to the new formation being of true bone, Mr. Bennett considered that these canals pointed to the manner in which the growth had taken place, namely, by the passage of blood vessels and cells from the osteogenetic layer of the periosteum of the tooth, this granulation tissue both causing absorption of the walls of the pulp cavity and deposit of true bone in its place.

Mr. STORER BENNETT said that being much interested in the specimen of bone in dentine described and figured by Mr. Salter, he had, in his official capacity, written to him some year or so ago, begging permission to examine and photograph the specimen ; illness, however, had prevented the request being complied with, but he still hoped he might be able to obtain and exhibit the specimen in the future. He felt sure Mr. Salter intended to convey in the description his belief that the abnormal tissue was true bone, and not secondary dentine, the three foramina at the neck of the tooth being the means of communication between the adventitious tissue and the periosteum.

Mr. J. F. COLYER, without wishing to claim any credit for originating a theory, said that looking at the two drawings and reading the context he felt that the balance of evidence was in favour of the views he had expressed.

The PRESIDENT remarked that the engravings were somewhat coarsely executed, so that it was very difficult to feel very decided upon the matter, but they did not look quite like bone to him.

Mr. DAVID HEPBURN said :—At the last meeting of this Society, some interesting examples of cemental union between teeth were brought forward by Mr. McLeod and Mr. E. Lloyd-Williams. Since that meeting, a remarkable specimen of this abnormality has come into my possession.

The specimen which I now beg to exhibit, shows a mass representing two abnormal geminated teeth, which existed in the situation of the left upper second molar, while at the extremity of its posterior root, what appears to be a wisdom tooth is horizontally placed and attached by dense osseous tissue.

The history is as follows. The patient, a gentleman aged 56 (who, it may be mentioned, exhibits marked attrition with pulp ossification of his remaining incisors, canines and bicuspids), some years ago discovered a growth protruding into the cheek at the posterior extremity of the left upper jaw. This causing some irritation, he consulted a dentist, who pronounced the growth to be a wisdom tooth erupting horizontally in an outward direction. Various dentists advised the extraction of this wisdom tooth, but the patient would never submit to the operation. Eventually, the mass representing the second molar began to loosen, the external plate to absorb, and after some years, the patient himself removed it, to his surprise bringing away also the portion which had been diagnosed as —and supposed to be—a separate wisdom tooth. A glance at the diagrammatic sketch (sketch exhibited) will explain the peculiar conditions of union, and in conclusion I would add that Mr. E. Lloyd-Williams, in referring to his case at the last meeting, said:—"One point of interest was the somewhat rare occurrence of 'cementosis' causing absorption and actual perforation of the alveolar plate." This case seems to bear upon this point, but I am inclined to think that odontomes, united teeth, and teeth greatly exostosed, frequently create perforation, more especially when necrosed; in this state they tend to assert themselves as foreign bodies, and so get thrown off by the surrounding tissues.

Mr. SPOKES showed two lantern slides which he had made from sections prepared by the Weil method. The first was a vertical section through the upper jaw of an infant aged about six months. The temporary incisor was seen emerging from the gum, and the amount of development of the permanent incisor at this stage, calcifying in its bony crypt, could also be observed. The second slide illustrated a vertical section through the lower jaw of a monkey. Here the root of the temporary incisor was undergoing absorption, and the crown of the advancing permanent tooth was in close relationship with the exposed pulp of the temporary tooth.

Mr. E. W. ROUGHTON read a paper, "The Micro-organisms of the Mouth," which we published on page 145.

DISCUSSION.

The PRESIDENT having thanked Mr. Roughton for his paper, said with regard to the growth of pathogenic organisms in the mouth, he might say, as an example of the contradictory statements occasionally met with on scientific subjects, that it had been stated that the saliva was inimical to the growth of pathogenic micro-organisms, although the contrary view was generally accepted. He would like to ask Mr. Roughton how the specimens showing the flagella were prepared, as it was usually necessary to make a culture in bouillon in order to show the flagella. With regard to

Finkler-Prior bacillus, he had thought that it was classed with the pathogenic organisms. In reference to the micrococcus tetragenus, he believed that Dr. Miller had found from experiments on mice that an inoculation of a culture was seldom, if ever, fatal. It was of course well known that the ordinary organisms of suppuration were found in pyorrhœa alveolaris, but it was still quite possible that the real cause of the disease was an organism that could not be cultivated out of the mouth, and he also thought that it did not usually succumb to treatment so easily as in the instance mentioned. He would also ask Mr. Roughton if he had met with a mixed infection of bacilli and micrococci in the same dentinal tube. He (Mr. Mummery) had often seen mixed infection, but never the two varieties of organisms in the same tube—although Dr. Miller had seen and described such a condition. Having regard to the conditions of dental operations, he thought mopping out the mouth with perchloride of mercury while the patient was under an anæsthetic would be a very inefficient means of sterilisation, and did not think it would prevent the conveyance of organisms into the tissue in the operation of extraction.

Mr. Storer Bennett asked whether the specimen showing organisms derived from a case of pyorrhœa alveolaris was a cultivation, or a cover-glass preparation obtained directly from a discharge, for in his experience it was very difficult to obtain a true cultivation of such organisms, and cover-glass preparations made directly from the discharge showed a very mixed infection.

Mr. William Hern noticed amongst the excellent microphotograph pictures of micro-organisms shown by the lantern, some almost, or quite, pure cultures, and he would like to ask Mr. Roughton what method he adopted to procure these pure cultures. He could not accept Mr. Roughton's statement as to the immunity from infection enjoyed by any healthy body if soaked within and without with micro-organisms; there were a large number of pathogenic organisms which he (Mr. Hern) would not care to trust himself personally to come into any such contact with, even when enjoying the best of health. He wished to congratulate Mr. Roughton on such rapid and successful treatment of a case of pyorrhœa alveolaris, as that mentioned by him, with a single application of 1 in 1,000 solution of bichloride of mercury to the gum margin. Cases of pyorrhœa alveolaris, in his experience, required much more lengthy and laborious treatment, including the removal of hard, tartar-like bodies from the roots of the teeth affected, before obtaining such a happy termination to a case.

Mr. HENRI WEISS asked, in view of the indisputable fact of the existence of these micro-organisms, and the suggested injurious influence on the teeth, whether Mr. Roughton could propose a suitable germicide for the mouth. He submitted that the mouth was not the most convenient situation for the exhibition of poisonous drugs, and even those which could be tolerated without danger to life, the results proved to be most disastrous to the teeth. In illustration of this he mentioned carbolic acid in the form of carbolic tooth powder, whereby caries was aggravated to a most alarming extent. In the use of bichloride of mercury, from experiments in another direction, he found great discoloration of the tooth tissues, and in some instances exfoliation of large pieces of the alveolar process. He would therefore ask Mr. Roughton to name a drug which would destroy these germs, and yet not be injurious to the contiguous parts.

Mr. ROUGHTON, in reply, said that he had been able to stain the flagella of the comma bacilli taken directly from the mouth. He took a small portion of the deposit from under the gum and mixed it with a little tap water, so as to form a milky fluid; a minute drop of this fluid was smeared across a perfectly clean cover glass in a very thin layer; the cover glass was then dried in the incubator, and fixed by passing three times though a flame. It was then heated in a mordant made by mixing a saturated solution of ferrous sulphate with a 20 per cent. solution of tannic acid; the mordant was next thoroughly removed by streaming with distilled water, and lastly with alcohol; it was then stained with carbol fuchsin. He admitted that there might be a special germ of pyorrhœa which was uncultivable; however, he thought it more probable that any of the pyogenic germs could produce this disease in a mouth prepared for their reception by accumulation of tartar, gingivitis, or other causes lowering the vitality of the gums. The specimen shown on the screen was a culture on agar. Many members seemed hardly to believe the account of the case of pyorrhœa he had cited; they must remember, however, that the case was in an early stage, and although there was profuse suppuration, there was no damage to the sockets of the teeth. Perchloride of mercury would stop the suppuration in an early case, but could not be expected to cure a case in which there great accumulation of tartar, necrosis of the jaw, or absorption of the sockets of the teeth. In answer to the President, he said that he had not seen dissimilar germs in one and the same dentinal tubule. In answer to Mr. Hern, he said that he had used chiefly the method known as the "line culture," for obtaining pure cultivations. Mr. Hern had mentioned syphilis as an example of germs being able to attack a perfectly healthy tissue; he thought that in most, if not all, cases of syphilitic infection there was some crack or abrasion, or some spot of diminished resistance. He made it a rule to mop out the mouth with a 1 in 1,000 solution of perchloride before performing any operation within its cavity; he was aware that it was not possible thereby to completely sterilize the buccal cavity, nevertheless he contended that by diminishing the number of living germs in the mouth (as this proceeding certainly did) the risk of the operation was diminished in the same degree. He thought that the danger of washing out the mouth with perchloride had been over-estimated, as the amount used was scarcely as much as an ordinary medicinal dose of that drug.

The President then called upon the scrutators to announce the result of the ballot, and he declared the following officers duly elected for the ensuing year.

PRESIDENT.

W. Bowman MacLeod.

VICE-PRESIDENTS.

Resident: T. H. G. Harding, R. H. Woodhouse,
Morton Smale.
Non-Resident: R. T. Stack (Dublin), F. H. Balkwill,
(Plymouth), W. E. Harding (Shrewsbury).

TREASURER.

S. J. Hutchinson.

LIBRARIAN.

Ashley Gibbings.

CURATOR.

Storer Bennett.

EDITOR OF TRANSACTIONS.

E. Lloyd-Williams.

HONORARY SECRETARIES.

W. A. Maggs (*Council*), Cornelius Robbins (*Society*), J. F. Colyer (*Foreign Correspondence*).

COUNCILLORS.

Resident: F. J. Bennett, E. G. Betts, B. J. Bonnell, J Ackery, A. Underwood, Harry Rose, C. D. Davis, Charles Truman, W. R. Humby.

Non-Resident: T. S. Carter, (Leeds), W. S. Woodburn (Glasgow), W. H. Williamson (Aberdeen), H. C. Quinby (Liverpool), D. W. Amoore (St. Leonards), Wilson Hogue (Bournemouth), G. G. Campion (Manchester), J. McKuo Ackland (Exeter), J. H. McCall (Leicester).

The President then read his Valedictory Address, which we publish at page 193.

VOTES OF THANKS.

TO PRESIDENT.

Mr. S. J. HUTCHINSON said that in accordance with the custom which had prevailed in the Society—he thought since it was first established—he had great pleasure in rising to propose on behalf of the members their very warmest thanks to their President for his services in the past year. It needed no words of his to emphasise the admirable manner in which he had carried out the duties of his most important office, nor would they expect him in Mr. Mummery's presence to say all that they felt about him; but he did think that it was only fair to recognize that in him they had one of the most thorough, earnest, and reliable workers in science of the present day—one whose deservedly high position was recognised not only in their own Society, but in all scientific societies throughout the world. They could not but feel that honour had been reflected upon them by his occupancy of his presidential chair. With regard to his personal qualities, he could not say much in his presence, but they had always felt how thoroughly the meetings had responded to his control, owing to the grace, courtesy, and tact with which he exercised it. He was sure that they would all join with him in a hearty vote of thanks and congratulation.

Mr. J. MANSBRIDGE, in seconding the vote, said that he was sure they were all so fully alive to the valuable services which Mr. Mummery had rendered them, that it was

was necessary for him to do more than re-echo the sentiments so well expressed by Mr. Hutchinson.

The PRESIDENT, in acknowledging the vote, said that he could not find words to convey his high appreciation of their kindness: he felt that far more had been said than he deserved, and that he had not fulfilled the duties of the honourable position as well as he could have wished, but he had done his best, and wished to take the opportunity of acknowledging the loyal support that he had received from the Secretaries and other officers, and to thank the members for the manner in which they had helped to make his duties pleasant and easy.

To TREASURER.

MR. DAVID HEPBURN said that it was his pleasing duty to propose another vote of thanks, one which, he was sure, would be heartily received by all. When he came to speak of their Treasurer, words seemed to fail him, because, in speaking of Mr. Thomas Arnold Rogers, he spoke of one of their oldest and very best friends. There seemed at one time almost a chance of a vein of sadness in connection with this year—that Mr. Rogers would be no longer an active member among them, and that the only link that would connect him with the Society would be that of honorary membership; but he was glad to say that this had been averted by Mr. Rogers' own wish to remain a paying member. This fitly illustrated his loyalty to the Society. The Society was indeed almost one of his children, for if it was not his child it was certainly a man's child. He was one of those whom they could hardly let slip from them. When they remembered he had twice filled the office of President, and that he had filled almost every other office that it was possible to hold, he felt that in proposing a vote of thanks to him in some way for his long, long years of service, he was expressing the unanimous feelings of the

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taries—who had the really hard work of the Society—in the kind support they had given him at all times. It was [illegible] true that he was one of the twenty members—of whom now only eight remained—who originally founded the Society, and they did look upon themselves as the fathers of the Society, and he might say that the dental profession was its mother. The compliment that they had kindly paid him [illegible] the honorary membership of the Society, he [illegible] indeed. He could not, of course, expect to be of any more use, for time brought its changes, and he often felt quite out of place amongst the many able, young, and energetic members who had come forward, but he should like to remain an ordinary paying member of the Society, because he felt that the Society needed all the help it could get, the [illegible] had not yet reached the amount to make them independent. He hoped that the contemplated new buildings for the Hospital would be adequate, but however big they might build it it must be outgrown in time. He had never [illegible] the opinion he had long held, that the Odontological Society should have its own home independently. He could only again thank them very much for their kindness, and especially for the kindness of their farewell that evening.

To Retiring Officers of the Society.

Mr. R. H. Woodhouse felt that they could not allow the re- [illegible] -iring Secretaries and other officers to pass out of office [illegible] -ut a vote of thanks. It was usual to couple the vote [illegible] -hat of the Treasurer, but in the special circumstances [illegible] -e it was rightly felt that it was fitting to separate [illegible] -t occasion. He thought that a special word of [illegible] was due to the Secretaries for their work of [illegible] how heavy that work had been was only [illegible] -hind the scenes, and he thought that a [illegible] was due to Mr. Ackery, who had [illegible] and assiduously. The work had [illegible] and it would have been difficult [illegible] assistance. In saying that [illegible] would not imagine [illegible] -ble services. [illegible] in which Mr. [illegible]

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The vote was put, and carried by acclamation.

MR. THOMAS ARNOLD ROGERS said that after he had delivered his Report he hesitated for a moment as to whether he should not return thanks to the Society and its members for all their kindnesses to him. He confessed he was not prepared for the kind words he had just heard, but he should nevertheless like to tender his thanks to the Society, to the Council, and most especially to the Secretaries—who had the really hard work of the Society—for the kind support they had given him at all times. It was quite true that he was one of the twenty members—of whom now only eight remained—who originally founded the Society, and they did look upon themselves as the fathers of the Society, and he might say that the dental profession was its mother. The compliment that they had kindly paid him in offering him the honorary membership of the Society, he valued very much indeed. He could not, of course, expect to be of any more use, for time brought its changes, and he often felt quite out of place amongst the many able, young, and energetic members who had come forward, but he should like to remain an ordinary paying member of the Society, because he felt that the Society needed all the help it could get, the Reserve Fund had not yet reached the amount to make them independent. He hoped that the contemplated new buildings for the Hospital would be adequate, but however big they might build it, it must be outgrown in time. He had never concealed the opinion he had long held, that the Odontological Society should have its own home independently. He could only again thank them very much for their kindness, and especially for the kindness of their farewell that evening.

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Mr. R. H. Woodhouse felt that they could not allow the retiring Secretaries and other officers to pass out of office without a vote of thanks. It was usual to couple this vote with that of the Treasurer, but in the special circumstances of the case it was rightly felt that it was fitting to separate them on that occasion. He thought that a special word of commendation was due to the Secretaries for their work of the past year; how heavy that work had been, was only known to those behind the scenes, and he thought that a special meed of praise was due to Mr. Ackery, who had worked most laboriously and assiduously. The work had been of no ordinary character, and it would have been difficult to carry it through without his assistance. In saying that much, he felt sure the other Secretaries would not imagine that he was detracting from their valuable services. He would also like to refer to the most able manner in which Mr. Coffin had edited the *Transactions* for a long time, and he was sure that he was only expressing the general feeling of the members in saying that his retirement from that office was a matter of great regret to them all.

Mr. J. **Ackery** begged to thank the Society for their kind appreciation of the work that had been done. It might appear to some that all the work had been done by one Secretary, but he could assure them that such was not the case; it had, in reality, been done by a committee of five or six members—it was not the work of any single individual. Although the meetings had been numerous, still the work had not been so very serious, he felt that they could scarcely talk of work in the presence of their late Treasurer, remembering all that he had gone through—that during the thirty-six years he had been a member of the Society, thirty-one had been spent in office, and that he had held every office, except that of curator and editor of the *Transactions*. He thought that in face of that they could only do their work cheerfully and look forward to more. He really felt ashamed that he had consented to remain in office another year, and thus was keeping someone else out of an honourable position, to the detriment of the Society, for he felt that the occupation of office often started an interest, and gave an incentive for work which would otherwise not be undertaken.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

Fourth General Meeting, January 31st. The President, Mr. P. A. **Linnell**, occupying the chair.

The minutes of the preceding meeting were duly read and confirmed.

CASUAL COMMUNICATION.

Mr. C. **Lingford** showed a superior maxillary bone in which the left wisdom tooth was inverted.

Mr. D. **Headridge** thought that it was one of the finest examples of inversion of wisdom teeth that existed. He proposed that Mr. Lingford should try and get possession of this specimen, and present it to the Society's museum.

Mr. **Lingford** said that the owner of it had already promised the specimen to some dental society.

QUESTION FOR DISCUSSION.

Is there any reason why cocaine should not be given when periostitis is present?

Mr. A. L. **BOSTOCK** said that he thought when congestion was present cocaine should not be given, as it is liable to increase the congestion.

Mr. D. **HEADRIDGE** said that he had seen in some dental journal a recommendation to inject a large quantity of cocaine when periostitis was present.

Mr. **MINSHULL** thought that cocaine had no evil results when injected where periostitis, especially when only in a moderate amount, was present, but rather the reverse. He related a case where he had injected cocaine in front of a lower molar of a lady where periostitis had just set in, and injection was followed with beneficent results.

The rest of the evening was devoted to the following clinical cases.

CASE I.—Mr. C. **LINGFORD**. Boy age 7. Temporary lower left lateral and canine geminated. On extraction it was found that the two roots were perfectly united.

CASE II.—Mr. D. **HEADRIDGE**. Symmetrical enlargement of lower jaw. Youth age 17.. This was a case in which slow symmetrical enlargement of the lower jaw had been continuing about five years. During that time, it had been quite free from pain, and had been going on without any assignable cause. The enlargement had produced no other symptoms, nor had there been any concomitant symptoms present. This swelling extends from the first bicuspid to the angles of the jaw, on the outer side of the arch of the teeth, which is rather small. There is also a swelling nearly the size of a walnut, on the inner side behind the symphysis. Both these swellings are dense, with a bony resonance when tapped, and the skin over them is freely moveable; there are no inflammatory symptoms, and no yielding to pressure or egg shell crackling. The patient has lost the 2nd bicuspid on the left side, and in addition to this, he has had extracted the two second lower molars. There is no previous history of rash, sore throat, or keratitis. The teeth, however, have a slight tendency to pegshape, the upper incisor bearing the suspicion of a notch, while the patient has rarely slight inflammation of the eyes. The growth has ceased enlarging during the last four months. Whether it was a tumour, osteitis, or some form of periostitis, Mr. Headridge could not decide.

Case III.—Mr. D. **Headridge** showed a cleft palate case with an obturator which he had made *in situ*. The special features in connection with it were its ease in making, and the facilities of renewing and refixing the vela by the patient. Instead of making an anterior and posterior flap as Mr. Heath did, he made only one piece of vela, which effectually closed in the aperture, and fitted close up against the superior constrictors of the pharynx behind. The block tin cast only required casting in two parts. The part covering the hard plate was made of two parts—one vulcanite, the other gold. To the gold plate, which should not reach to the teeth is soldered a rim of gold and below this a pin so that when the flap is placed in position, the anterior edge is dovetailed in between the rim and plate, thus excluding the air. The plate is let into the vulcanite portion carrying the artificial teeth, by means of stays.

The obturator proved very satisfactory, as the patient, who is a railway porter, can shout and articulate very distinctly.

Mr. F. L. **Tanner** thought that obturators should be discarded, and an operation urged at an early age, say between 3 and 4.

Mr. **Linnell** proposed a vote of thanks to Messrs. **Headridge** and **Lingford** for the cases they had brought that evening, which was seconded and carried unanimously.

The proceedings then concluded.

Reviews

Continuous Gum Work. By Harry Rose, L.D.S. Eng.
Lecturer on Dental Mechanics, National Dental College.
The Dental Manufacturing Company, Ld, London, 1893.

From the introduction, this treatise appears to be an elaboration of a former publication, and, in addition to the details of the actual methods employed, there is a description of the preparation and manufacture of fireclay muffles, trays and pots. The arguments in favour of continuous gum as against gum sections are also to be found in the introduction.

By an ingenious device of plaster sections, moulded to the prepared model and lined with moistened tissue paper, the author demonstrates a way in which an accurate building up of the mineral compound may be brought about. It is claimed that the material used is practically unshrinkable, and the gum enamel free from cracks; another advantage is that any description of tooth may be used. One of the objections sometimes raised to the use of continuous gum, is the difficulty of carrying out a repair in the event of a tooth getting broken. The author describes a mode of making a gum facing with removable teeth which are dependent for their attachment upon the vulcanite carrying the facing. Any repairs are then effected as simply as in ordinary cases where that material is wholly used. Notes on firing and vulcanizing are among many other points dealt with, and Fig. 14. represents the "Record" furnace which the author uses.

Elements of Chemistry and Dental Materia Medica. By J. S. Cassidy, D.D.S., M.D. Professor in Ohio College of Dental Surgery, Cincinnati. Robert Clarke and Co, 1893.

This book has been written for the students attending the author's classes, and very fairly covers the ground of the subjects considered. In some cases, indeed, it may appear that the author has overstepped the line in referring to other matters. Thus in treating upon the subject of Hydrochloric Acid, the chemical (*per se*) theory of dental decay is introduced not for the purpose of refutation, but apparently with approval. "If hydrochloric acid is formed in the mouth, in accordance with the affinities by which it is developed in the gastric juice, a chemical analogy by no means improbable, the nascent individual molecules of the acid would simultaneously decompose the calcium carbonate, and dissolve the calcium phosphate."

Under Nitrogen we read:—"Nitric acid is believed by many experimenters to be the cause of the rapid, or white, variety of decay of teeth. This idea does not conflict in the least with the so-called 'germ theory' of decay, inasmuch as the ferment of nitric acid has been discovered recently." The acid acts molecularly, at the instant of its formation. "It is not conceived that caries are (*sic*) formed only by a general acid nature of the oral fluid, on the contrary the latter may remain neutral or even be decidedly alkaline."

Under the heading of iron, we find a statement as to its existence in the red blood corpuscles, and this leads us on to respiration, oxygen, carbon dioxide, anæsthesia and finally to the action of nitrous oxide.

In the index it is to be noticed that there is "a slight departure from the usual orthography of certain words." This consists principally in dropping the final e, as in Chlorin, Iodin, Oxid. But we also indulge in Sulfur.

We note the author expresses the opinion that Europhen, one of the new antiseptics, is thus named in honour of Europe. There are several typographical errors, which to some extent, mar an otherwise well-got-up volume. Lavoisier's name, for instance, occurs on page 233, as well as Priestley's, but each is wrongly spelt.

Dental News

APPOINTMENTS.

R. D. Ashby, L.D.S., and T. E. Constant, M.R.C.S., L.R.C.P., L.D.S., have been appointed Honorary Consulting Dental Surgeons to the Royal Northern Sea Bathing Infirmary Scarborough.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

To the Editor of the "British Journal of Dental Science."

DENTAL PRACTICE IN COLORADO.

Sir,—Perhaps the following note may interest some of your readers.—The dental law of the State of Colorado requires all persons who practise dentistry to possess a qualification from a reputable college, or to pass an examination before the State Board of Dental Examiners of the State of Colorado. This is one of the most stringent Dental laws of the United States; but it is not acceptable to every one. A bill in the form of an amendment, has just been introduced into the legislature, which provides that a candidate shall be entitled to demand a certificate from the State Board without examination and without possessing a qualification; but merely upon the affidavit of two persons testifying that the applicant is and has been, a practising dentist. Possibly this proposed method of "reforming backwards" is to meet the wishes of some advertising section of practitioners who would like to employ under "cover" assistants and representatives, who cannot comply with the existing requirements. However, at a special meeting of the State Dental Association the bill was read and unanimously denounced; and a committee was appointed to confer with the house committee of the Legislature to frustrate this tinkering with the Dental Laws.

Yours &c.,
THOMAS GADDES.

THE GENERAL MEDICAL COUNCIL'S WARNING: REGISTERED DENTISTS AND UNREGISTERED ASSISTANTS.

[Mr. Tracey, of Glasgow, has forwarded to us a copy of the following letter, which he has received from the Solicitor of the General Medical Council. *Ed. B.J.D.S.*]

66, Lincoln's Inn Fields,
London. 10th February, 1893.

Sir,—

The President of the General Medical Council has directed me to reply to your letters to the Registrar of November and December last.

The resolution of the Council is not directed against apprenticeships, but against the improper employment of unqualified persons. Apprentices do their work under the immediate supervision of their Masters, and should not be employed without such supervision.

It is impossible for the Council to define before hand what is proper or improper employment of unqualified assistants. Each case will depend on its own circumstances, but I may say as an example, that the Council would consider the handing over of a dental practice to the sole control of an unqualified assistant, as falling within the resolution to which your letter refers.

I am, Sir,
Your obedient servant,
(Signed) F. W. FARRER.

P.S. The disciplinary powers of the Council arise under Section 13 of the Dentists' Act of 1878. (Initd.) F. W. F.

[To the above, Mr. Tracey replies in a letter of great length, which we find ourselves unable to reproduce in its entirety. He, however, expresses his dissatisfaction, discusses Section 13 of the Dentists' Act, and himself issues a "warning" in the following manner. *Ed. B.J.D.S.*]

"As a matter of justice to the Members of the General Medical Council and the Dental Profession generally, I have no hesitation in demanding an immediate withdrawal of said warning, and warning you and the Members of the General Medical Council, on no account in future to assume supremacy over statute which can be understood, either for individual gratification or amusement or any other purpose whatever, and not be passing resolutions which cannot be thoroughly comprehended without the aid of such a letter as that under answer, and which only adds confusion to that which was confounded."

To the Editor of the "British Journal of Dental Science.'

Dear Sir,—The General Medical Council have at last issued their interpretation to their late resolution regarding unqualified dental assistants, and from their interpretation, the resolution may be at once set down as most merciless, for it has entirely banished all the bright hopes I held for my future career as a dentist. Not being favoured with the blessing of wealth, by acting as assistant to a dental practitioner, I was thus enabled to proceed with my studies. My employer owing to this new resolution cannot now give me the same salary as before, because I am of no use to him except as a mechanic and thus I can proceed no further with my classes. Why should a man who has put in his hospital practice etc., be prohibited from extracting a tooth or consulting with a patient during his employer's absence? I don't mean an absence of a few months, for that means the whole management of a practice. I mean to say that if the principal should have occasion to be out an hour on business, and a party come in and wished to have a tooth extracted why cannot an unqualified assistant be allowed to extract it, if he is capable of doing so. I have no doubt but that there are many who are placed in the same peculiar circumstances as myself, and what are we to do? I have a knowledge of no other trade or profession, and there is only one way clear to me, that is of practising on my own account: I have a better right to do so than those who are doing so and have no knowledge of dentistry whatever.

In a few days I will have the following sign above my door. "Mr.——— consulting rooms, teeth extracted, and inserted. Fees moderate." I must make a living some way or other, and I would advise all my brethren similarly placed to do likewise. What will the Council have to say then? Why don't the long headed members of the council turn their attention to Quacks, and not interfere with men who are striving hard to gain the dental diploma? The life of an impecunious student is truly hard enough without being further harassed by the merciless resolution of men who never knew what a struggle in life meant. Thanking you Sir in anticipation for the space.

I remain, "A BLIGHTED STUDENT."

ANSWERS TO CORRESPONDENTS.

H.C.R., Penarth.—Your communication shall receive attention.

Henry Salamon, Budapest.—Your letter and its interesting enclosure to hand: we hope to make use of the latter.

R, Tuck, Truro. Want of space prevents our publishing your paper at present.

British Journal of Dental Science.

No. 604. LONDON, MARCH 15, 1893. Vol. XXXVI.

REMOTE PAIN IN DENTAL DISEASE.*

By James Maughan, M.D. Brux., L.R.C.P. Lond., M.R.C.S. Eng.

Mr. President and Gentlemen,—Before proceeding to read my paper I must first of all express to you my deep sense of the honour you have done me in asking me to address you to-night. Standing before a Society, whose name and work are justly held in such high repute in the dental world, it is but natural that diffidence should be my chief virtue at the present moment. If, after my promise to read a paper, there had been a way of retreat with honour, I feel sure that not only the task of addressing you, but also the comprehensiveness of my subject, would have urged me to obtain my release. However, I shall do my best, and I know your forbearance will be with me.

It has been truly said that "every practitioner of dentistry and of general medicine constantly meets cases of obstinate and inexplicable pain, whose *raison d'être* seems past finding out—cases that yield to no therapeutics, and whose continuance is a standing rebuke to the profession, and a source of misery to the sufferer." But we may congratulate ourselves on the fact that these cases are becoming fewer and fewer every year. What was once dark and obscure in the doctor's mind as well as in his words, is now illuminated by the side lights of physiology and pathology, which have made such strides in the last few years, all honour to the immortal work of Ferrier, Horsley, Beevor, and Schäfer.

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* Read before the Odontological Society of Great Britain.

Remote pain in any disease is of common occurrence, but the descriptive details, to say nothing of the pathological *rôle* are both scant and inexact.

When a child complains of pain in the knee-joint the surgeon invariably examines the hip, but why? Because his experience has taught him that one of the earliest evidences of morbus coxæ is the existence of pain in the corresponding knee. We all know that when a man is passing a calculus down the ureter, he is doubled up with a pain running down to the groin and testicle of the same side. During an attack of epididymitis after gonorrhœa, pain in the front of the thigh is a very frequent symptom. Pain in a testis may, in fact, alternate with pain in a tooth. If there be ulcer of the stomach or disordered liver, we get pain in the interscapular space, or over the right shoulder blade as the case may be. Who will explain why a prick on the thigh causes a sharp pain at the shoulder blade? Who will answer the question why the uterus should painfully contract while a mother is suckling her infant? So, gentlemen, in your special domain of surgery it must be a matter of importance to be familiar with the common nervous phenomena caused by a dental lesion, as also it must be a matter of interest to you to trace the cause from the effect, and *vice versâ*.

It will be necessary to refer to reflex affections of the muscles and special senses, but only so far as will aid us materially in our present study.

The fifth cranial nerve supplies the teeth, its second and third branches going to the upper and lower jaws respectively. Hence if there be any irritation in a tooth, a branch of the fifth nerve is invariably affected, and this is true whether we are conscious of it or not. Consciousness of sensations is not necessarily co-existent with passage of sensations. Two of the chief duties of a dental nerve are to convey trophic fibres downwards and sensory messages upwards. These messages constitute a species of energy varying in vehemence, say, from that produced by a mild tap on a tooth to that following the insertion of a red-hot darning needle up the fang of a molar.

A portion of a dental nerve may be introduced between the two divided ends of a motor nerve, and it will then transmit a motor impulse. Thus we are not surprised to learn that, histologically, there is no distinction between a motor and a sensory nerve fibril.

In travelling brainwards along a dental nerve we observe a ganglion by the wayside: Meckel's belongs to second, the otic to the third division of the fifth. These are undoubtedly local government centres. They are each supplied with a sensory, motor, and sympathetic root, which confer certain specific properties that are dispensed by its branches. But the roots of these ganglia are under the control of an imperial power, and the sensory roots send their feelers to the fifth nerve sensory centre at the base of the brain. Here indeed is the origin of the dental nerves ; here is the cell whose elongated process enters the apical foramen as the dental nerve axis-cylinder. The Gasserian ganglion on the root of the sensory fifth is analogous to the ganglia on the posterior roots of the spinal nerves, and one of its main duties is to govern the nutrition of the fibrils that pass through it. Coming to the centre of the fifth nerve we are struck by two things—first, the extensive origin of its fibres, and the second, the straggling character of the cells that constitute this origin. The highest fibres arise from a group of cells close to the third cranial nerve, whereas the lowest are traceable as far down as the level of the second cervical vertebra. In the interval between these two points, viz., along the floor of the aqueduct of Sylvius, and fourth ventricle, and in the substantia gelatinosa of Rolando over the posterior cornua of the spinal cord, the fifth nerve is in intimate relationship with every cranial nerve, from the third to the twelfth inclusive, as also with the sensory spinal nerves lower down. It is interesting to note that those fibres which travel downwards to the spinal cord degenerate when their connection with the Gasserian ganglion is severed. I hope to be able to show that by drawing a string through the medulla separating the centres of the part-facial, the sixth, fourth, and third above from those of the fifth motor, part-facial, auditory, glosso-pharyngeal, pneumogastric, spinal accessory, and hypoglossal nerves below, the sensory fifth centres from upper and lower teeth respectively are at the same time differentiated.

The adjacent cells in the fifth nerve centre intercommunicate, and every dental message passes through at least two central cells before it travels across the middle line, and up to the cortex cerebri of the opposite side, to end there in a small cell.

For the appreciation of pain the sensorium must be intact and the path downwards to the energised cell unbroken.

Often, however, the pain is not correctly localised. In the large number of cases a previous history can be obtained which explains away the difficulty. For instance, a first bicuspid may cause great pain, but after devitalising the pulp, and inserting an appropriate filling, the patient ceases to suffer. A few years later severe pain may be felt in the same tooth, and yet be due to a carious molar further back. Just as it is easier for a boy to slide on a well-worn slide, so it is easier for nerve force to travel along a beaten track of pain than to arouse some healthy un-irritable nerve-cell to a state of undue excitement. In this case the message of pain travels to an adjacent cell, which, with its nerve, it energises and the report reaches the sensorium that the old tooth aches again. To take another condition, suppose a cell energised by an exceptionally acute dental irritation, how easy for that energy to be communicated to an adjacent cell which represents a sensory area of face or scalp. It is thus we get remote pain in dental disease. But we can go one step further. If a patient complains of pain in any area supplied by the first or second division of the fifth, we may presume the source of irritation to lie, if truly dental, in the upper jaw. If the painful area be supplied by the third division of the fifth, the great occipital, small occipital, great auricular or superficial cervical, then we search for the cause in the lower jaw, and in these presumptions we are abundantly justified. Nature is not so eccentric as some imagine her to be, for we will see in her pathological symptoms how regularly the cells belonging to the dental nerves are arranged, from that of the upper central incisor nerve above right down to that of the lower central incisor nerve below. Let us consider now a few illustrations.

A patient complained of blurred vision in the right eye, and said it had lasted for upwards of twelve years. On examination, the pupil was found dilated and unresponsive to light, thus indicating paralysis, temporary or permanent, of a few fibrils of the third nerve. On looking into the mouth a right upper molar was discovered carious. This was extracted, and three weeks later the pupil was normal and the sight perfect.

A woman, aged 45, slightly presbyopic in both eyes, came to the National Dental Hospital complaining of impaired vision in the right eye and a painful first right upper bicuspid. On closer questioning I found that her trouble was a suddenly increased presbyopia in the right eye, and that if she closed her left eye she could not accommodate her vision at all for near objects. This patient's centre for accommodation was getting tired out, as so many people of 45 years of age unconsciously testify by their need of convex glasses when reading. The upper part of the fifth nerve centre lying alongside the accommodation department of the oculo-motor centre inhibited in this woman a cell-action that was already beginning to flag in its work. The offending tooth was removed, and the failure of accommodation of the right eye was restored to the extent that it became equal to that of the left.

Mr. Hutchinson has placed on record a case that is instructive in this connection. A woman enfeebled by nursing stated that the sight in her left eye was failing. For upwards of a month she had suffered from periodical pain in the left eyeball and forehead. The eye was watery, irritable, photophobic, and she could read only big capital letters. She gave no history of toothache, but Mr. Hutchinson extracted a carious upper molar, with the result that all the eye symptoms vanished. In this case the real cell that should have ached transmitted the message to an adjacent sensory cell, and thus energised it and its branches which supplied the eyeball and conjunctiva.

To show the reality of remote pain, one need only point to the case recorded by M. Raymond. A woman, aged 38, had severe pain in the head when she noticed her hair change colour from black to red and then to white, after which it began to fall off. The nerves that once transmitted the most harmless messages, were subjected to a pathological energy, so severe as to lead to inflammatory and structural changes in both nerves and nuclei. Trophic changes cause degeneration of the nerves, but this is of slower progress than actual neuritis and its results.

Before dismissing upper teeth from our mind, let us remember that pain due to disease in them is to be found any area anterior to the line passing from the angle of the mouth up to the apex of the occipital bone, separating branches of the first and second divisions of the fifth nerve anteriorly from those of the third division posteriorly.

Mr. Cattlin describes a very interesting case of deafness in the right ear that had lasted some four days, but was cured in an hour by the extraction of a right lower molar. Cases could easily be multiplied in which earache, pain in the temple, pain behind the ear, at the side of the neck, and shooting down the arm have all been traced to disease in a lower tooth on the same side.

The inferior dental nerves arise from cells in the medulla, but when the irritant is a very severe one, the impulse is communicated to cells of the fifth lower down. Thence it travels to sensory cells of the cervical nerves, and so causes pain in the neck, shoulder, and upper extremity.

The inhibition of hearing is readily understood when one remembers the proximity of the middle root nuclei to the auditory nerve centre. This inhibition is on a parallel with paralysis of the bladder, which occasionally follows the opening up of a fistula.

Reviewing the cases of remote pain in dental disease that have come under my notice, I am struck by two facts—one, the unilateral situation of the pain, the other, the usual association of a separate area with each separate tooth. An impacted lower wisdom will not cause pain within a nostril, nor will pain behind the ear be due to a carious upper incisor.

Far and away the most frequent cause of this remote pain is chronic inflammation of a pulp superficially. Secondary dentine and an exostosed fang are also prolific causes.

Difficulty in evolving a wisdom, alveolar periostitis, a fang roughened by absorption, a pulp putrefying in a confined space—are all common causes of the same pain. Diseases of the mucous membrane and jaw, periosteum, and tumours of the parotid and jaws may also be included.

The question of diagnosis is a wide and far reaching one. Equally is it the duty of the dental and medical practitioner to do the best for the patient. If a dental surgeon suspects the existence of chlorosis, anæmia, hysteria, gastro-enteric troubles, migraine, gout, rheumatism, syphilis, &c., he has not done his duty until he has strongly urged his patient to consult his medical man, and that without delay.

On the other hand it is derogatory to the profession, and uncomplimentary to his acumen or honour, if a medical man continues administering bottle upon bottle of quinine and iron, while the cause of the neuralgia is a caries that goes on unchecked and untreated.

By the use of your mirror, percussion, heat and cold, biting with each tooth separately, inquiring as to the exostosis of a previously extracted tooth, &c., the source of pain, if that source be dental, will be readily indicated. Very often, on applying your tests, you re-light a slumbering neuralgia, and so obtain a decisive clue.

You may have wondered why I have not spoken of Trousseau, of Anstie, and of Dr. Lauder Brunton. The last named is the only one who has really trodden on our territory. Dr. Lauder Brunton appeals to the superior cervical ganglion to explain by its own perturbation an alternate distension and contraction of the blood vessels, and so the production of trigeminal pain. When any tissue of the body works—be it brain, gland, or muscle—the supply of blood is increased to the part by an inhibition of the sympathetic. Now if a sensory nerve aches, it is transmitting a considerable nerve force. This is work indeed, and necessitates more blood to the part, but surely that increased supply of blood is due to the need created by the increased work—in other words, the pain causes the flushing, not the flushing the pain. Very probably Dr. Brunton will see his way clear to re-consider his dictum, and accept the explanations of Ross, Gowers and others.

Both Trousseau and Anstie have regarded neuralgia mainly from the abstract or idiopathic point of view. Trousseau draws our attention to two tender points—*points apophysaires*—over the upper two cervical spines as an invariable symptom in trigeminal neuralgia. Dr. Anstie made the bold assumption that all neuralgias were due to atrophy. If he were alive now he would, I am sure, be convinced of the untenability of his hypothesis.

Before discussing the treatment, an interesting question might be here propounded. Why is it that a definite tooth lesion should cause a spasm in one man, whereas the identical lesion produces paresis in another?

Constitutions vary and temperaments too, and the moulding of our nerve cells is, forsooth, delicate handiwork. Our everyday experience tells us that some people are highly strung, restless, and nervous, fearful of the slightest touch of an excavator—nay, the mere use of a mirror. Others there are who seem to be marble masses of stoicism.

In the first instance, the nerve cells are unstable with energy waiting to be liberated. A mere tap on a tooth in this instance may be sufficient to cause a spasm of the face. No sooner is the energy thus liberated, than a fresh supply is created, and the nerve cells are filled to overflowing again. In the other instance, however, the nerve cells are kept in such perpetual check by higher cells that the check is simply accentuated and the centre inhibited when a dental pain travels upwards.

The character of a reflex tonic spasm is observed in its analogue—the muscle of a sphincter. The contraction is wavy, and occurs in the fibres in a consecutive fashion.

Pure inhibition is productive of no permanently bad results as a rule, but one must remember that a hysterical paraplegia may become an absolute and permanent paraplegia after some years' duration.

There is only one medicine that I find of any value in the treatment of remote pain, and that is acetanilide or antifebrin. It is a drug that requires care in administration, cyanosis and urgent dyspnœa occasionally following its action. I rarely give it to those who are well on in the degenerative period of life. It suits pale, spare men and women best. It is given every two hours till the pain is relieved, in doses of two to five grains, placed on the tongue, and washed down with milk. If there be signs of a fatty heart, I exhibit a mixture containing ammonia, gentian, and spirits of chloroform, with small doses of the antifebrin. Locally, I advise veratria ointment and massage. Dentally, I shall not pretend to speak, for you all know that part of the treatment far better than I. Abundance of fresh air, nutritious food, fresh butcher's meat, a regular daily relief of the bowels, and a little medicine, such as cod liver oil, quinine, iron—especially the reduced iron—and the Blaud's tabloids, prepared by Burroughs, Wellcome and Co., are all valuable in their way, and in suitable cases. But be it understood no drug exists that can take the place of skilled dental treatment. If any of the remote pain remain after the full dental relief has been given, galvanism will probably complete the cure.

Gentlemen, I thank you sincerely for the patience with which you have listened to my paper.

NOTES ON SOME OF THE SPECIMENS IN THE RECENT B.D.A. MUSEUM.

By Geo. G. Campion, L.D.S. Eng.

Mr. President and Gentlemen,—When casting about for a subject on which to read a paper at this meeting, it was suggested to me that some notes on some of the specimens in the Museum, held at the recent meeting of the British Dental Association, might perhaps be of interest to the members of this Society. This suggestion I very readily welcomed and adopted, as the collection was in many points one of singular scientific interest and contained specimens of abnormalities which I believe have not been hitherto described, besides others of the greatest practical importance. It is a matter for no little regret that this valuable collection should have had to be broken up in so short a time, and that only three days were available for studying its contents. These days were not however wasted, and I hope that ere long, reports on, at any rate, some of the different sections will be published, drawing attention to the lessons which might be learned from them. To-night I have to offer you only casual notes on a few of the specimens, or grouped specimens, and these illustrated by the photographs will not I hope prove uninteresting.

Turning first to the specimens of abnormally formed teeth, one may remark at first on the variety and value of the collection. I have always read with envy of the collection of abnormal teeth formed by Wedl and Heider in preparation of their Atlas, and Wedl's Pathology of the Teeth. Heider collected during twenty-three years, but his specimens proved far too limited for the study, and had to be supplemented by the examination of thousands of teeth furnished by a hospital in Vienna. But the recent collection contained specimens which Wedl in his Pathology expressly notices as being absent from theirs, and others which he does not describe, but which so careful an observer would certainly have drawn attention to had they come under his notice.

First, I would draw attention to the specimens of enamel nodules. We are all acquainted with the appearance of those beads of enamel occurring generally on the roots of molars just below the neck of the tooth. Often there is a minute process of enamel projecting down from the enamel cap of the tooth and pointing down to, although separated from, the nodule itself. Occasionally this process of enamel is more pronounced and forms a ridge of enamel connecting the nodule with the enamel cap, and this suggests the thought that the nodule is formed from a tiny offshoot from the normal enamel organ, but that the connecting link between them is usually severed before the formation of enamel, although sometimes it may be maintained and remain functionally active. This process of enamel may exist without any nodule being attached to it, and in these cases is found extending between the roots of molars. In the Museum, four such processes were present in upper molars and one on a lower molar. It is remarkable that enamel nodules should be found with comparative frequency upon upper molars, and only very rarely on other teeth. Out of fifty-three nodules in the collection, four only were on lower molars, and one on a lower bicuspid, the remainder being all on upper molars. Their formation with such relative frequency on upper molars, is noticed also by Wedl, who states that these are the only teeth on which he had ever found them. Their position on these teeth is usually on one side of the palatine root, or between *two* palatine roots. Thus in twenty-three out of fifty-one specimens, the nodule was placed between the palatine and posterior buccal roots, or (as in two cases) on the fused palatine and posterior buccal roots. In one case only was the nodule placed between the palatine and anterior buccal roots, and in three cases on the fused palatine and anterior buccal roots. In no less than ten specimens were nodules found between two palatine roots.

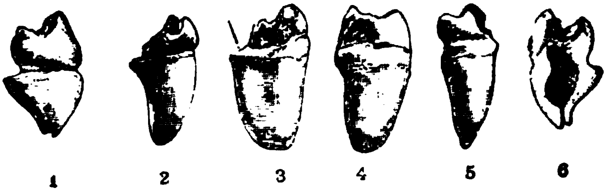
But one of the most interesting points to be noticed in this section, was the presence of some specimens showing transitional forms between an enamel nodule and a conical supernumerary united to an ordinary tooth. There were two specimens of this union between a conical supernumerary and an ordinary tooth, the union being in one case with an upper bicuspid, in the other with an upper molar. The root of the supernumerary was in each of these cases distinctly traceable in the root of the tooth to which it was joined, but other specimens showed this root partially or wholly absorbed into the larger root, and the conical crown alone remaining and this too becoming smaller and rounder and approximating to an ordinary enamel nodule.

Microscopically, nodules are composed both of enamel and dentine, the dentine being apparently formed beneath the tiny cap of enamel in precisely the same manner as in an ordinary tooth. It may be indeed that enamel nodules are homologous with supernumerary teeth, the difference being one of degree rather than kind. This is a point on which the further study of the development of teeth may probably throw some light.

Another interesting group of specimens was that illustrating the deformity known as Dilaceration. Incisor teeth showing this malformation are not perhaps very uncommon, and are well known to all; the crown and root are formed at an angle to one another, the displacement of the crown being either forward or backward; in the former case its palatal surface looks downwards, and in the latter the labial surface.

In seven upper incisors with this deformity well marked, the displacement in four was backwards, and in three forwards This deformity has been attributed to a blow on the mouth given at the time of the formation of the tooth; such a blow being supposed to change the position of the calcified portion upon the dentine papilla and thus give rise to the deformity. Wedl, it is true, does not accept this hypothesis as affording an adequate explanation, but it is not my purpose here to discuss the question. I wish rather to draw attention to another form of this displacement which has not, I believe, been before described.

In the Museum were no less than twenty specimens of bicuspids showing different degrees of displacement of the crown laterally upon the roots. The figures show clearly the abnormal form.



Five specimens of bicuspids dilacerated at the neck. In fig. 3 the line rising at right angles to the shoulder indicates the original position of the enamel; the enamel itself having been fractured at this point at the time of the extraction. Fig. 6 is a section through the tooth represented in fig. 1, and shows well the relative size and shape of the pulp chamber.

There is no abrupt bend in the axis of the tooth, but the crown seems as it were to have been shifted bodily to one side, and the root then to have continued its growth much as if no such displacement had occurred. The result is a distinct shoulder or ledge at the neck of the tooth, more or less marked according to the amount of the displacement. There seems also to be some relation between the amount of the displacement and the length of the root. Where the displacement is slight, and is marked by little more than a line round or on one side of the neck of the tooth, the root forms to the normal length; but where the displacement is considerable the root is formed thicker than usual and proportionately shorter. In the drawings which have been made from five such specimens showing different degrees of this malformation this is clearly seen. When I first observed this abnormality some years ago, it occurred to me that it might be simply an exostosis, but a section through one of the teeth showed a considerably enlarged pulp chamber, the pulp extending under the shoulder just described, and a microscopic section of one of the teeth showed the shoulder to be composed entirely of dentine, there being no cement at all on the upper third of the root at this point; evidently then the deformity involves all the tissues of the tooth, and must have been occasioned by some force acting during development. A possible explanation is to be found, I think, in the premature extraction of the temporary molar. It is well known that sometimes the crown of a half-formed bicuspid has been removed with a temporary molar, the root of the molar having clasped the forming tooth so closely that its removal at the same time was inevitable. Such a specimen was to be seen in the Museum, and others have been figured in the text books. But supposing the roots of the temporary molar to have been somewhat more absorbed, it might easily happen that the removal of the molar might give the forming crown a serious dislocation without actually removing it, and thus cause its displacement sufficiently on the dentine germ to give rise to this abnormality.

The most remarkable of these specimens was one contributed by the Students' Society of the Dental Hospital, and a full description and figure of it might well be published in one of the Journals.

Another section of the Museum of the greatest interest was that illustrating the subject of gemination. Under this head are generally classed quite indescriminately three distinct varieties of united or double teeth. These varieties are (1) Teeth united by cementum, (2) Organic union between neighbouring teeth such as a central and lateral, or lateral and canine, arising during development by fusion of the two adjacent germs, and (3) Single teeth such as a lateral or molar taking on a double or twin formation. The first of these varieties or teeth united by cementum are mostly of pathological interest, but may perhaps include those cases of union between the upper second molar and wisdom teeth where the roots of the wisdom teeth pass between and are clasped by those of the second molars.

The distinction between the second and third varieties is noted and insisted on by Wedl, but is ignored and confused in the English text-books, though it seems to be a real one and to be quite clearly defined; the one arises from the coalescence of two adjacent germs, the other by the duplication of a single one. Both varieties were represented in the Museum ; the former more particularly in the temporary, and the latter in the permanent teeth. There were many specimens of the union among the temporary incisors and canines, and one specimen of triunion.

In some of these the union was between two of the incisors, and in others between the lateral and canine. In the permanent teeth there was one specimen of union between central and lateral, one of union between molar and bicuspid, and six of union between second and third molars. There were also some specimens of double molars of which it was easy to determine in which category to place them.

Of twin-formed teeth produced by the duplication of a single germ there were many. Centrals, laterals, bicuspids, and molars all seemed to partake of this deformity, and among the models there was one specimen of a canine.

A question of great interest arises here, the question, viz., as to whether these teeth are all to be considered as mere sports or freaks of nature, as examples only of dichotomy such as is seen in the lower animals, in the duplication of feathers, digits, and other parts, or whether they may not in some cases be regarded as instances of Atavism? Bland Sutton in his "Evolution and Disease," reproduces from Tomes' Dental Surgery, a specimen of united lateral and canine, and describes it as an equal dichotomy. This seems clearly wrong, such a specimen being produced, as Wedl long ago pointed out, not by the duplication of one part, but by the union of two. If dwarfed or absent laterals and wisdom teeth may be regarded, as they usually are, as evidences of their gradual disappearance by a process of evolution, then may not a twin-formed central, lateral, or bicuspid be regarded as a case of atavism, as an effort on Nature's part, to recover one of the lost incisors or premolars. But here we enter the region of speculation where in scientific, as in financial matters, it is desirable to sound a halt.

It would be easy to fill many sheets with notes drawing attention to other points of the greatest interest in the specimens of abnormal teeth, but probably some may be expecting to hear something of the models showing irregularities in position, for that is a subject of daily interest, and one also of great practical importance. There are no doubt many practitioners to whom a practical Museum illustrating this subject would be an immense boon. From a large number of carefully recorded cases each illustrated fully by a series of dated casts, drawings or specimens of the apparatus used, notes on the age, sex, physical condition of the patient, and type and quality of the teeth, the most valuable help might be obtained; but cases of this kind much as we hoped for them, were with one or two partial exceptions, conspicuous by their absence. No doubt the knowledge to be thus obtained would be incomplete, but it would be better than any that we have at present or that we are likely to get by any other means, and its advantage to a young practitioner can hardly be overestimated.

In the Museum to be held at Birmingham next April, a special feature is to be made of complete cases of this kind, and we may express here a very earnest hope that the Birmingham men may be more successful in this direction than we were, and obtain such specimens, both more easily than we did, and in greater abundance.

My impression however is that such cases are at present almost non-existent in this country, and I may perhaps not unfitly conclude by expressing a hope that this Society may see its way to devote some of its resources towards the gradual formation of a museum of this kind. The collection of such material is at present being done either individually or not at all. But there seems no reason why some collective effort should not be made towards this end, for this is essentially one of those objects the attainment of which, while hopelessly difficult and laborious for one or two, is comparatively easy for a number. Such a collection, illustrating fully different methods of treatment of similar cases and the results obtained by each method, would furnish a sound basis for a work on the Treatment of Irregularities of Position ; indeed it is only by the aid of such a collection that a comprehensive work of this kind can be rationally carried out. In the published works dealing with this subject, the treatment is entirely fragmentary, and time, space, and ingenuity are wasted in inventing special systems of treatment, or applying them when invented, to all kinds of cases. If, instead of this, more efforts were made to ascertain the comparative value of different methods in similar cases under similar conditions, these works might lack something of their ingenuity and originality, but would assuredly be of more serious interest to the average practitioner, and aid him more frequently in the pursuit of his ordinary work.

VALEDICTORY ADDRESS.*

By R. H. Bates, L.D.S. Eng.

Gentlemen,—Time brings all things to an end, amongst others my tenure of office, and it is with sincere regret that I vacate a chair which has been a source of so much pleasure to me.

My duties have been anything but arduous, owing to the help and hearty co-operation which you have all afforded me, and I shall always look back with pleasure upon the past year.

In glancing over the work done, we may certainly congratulate ourselves on the progress which the Society has made. The papers read have been quite up to the standard of previous years, our numbers have increased, and we are flourishing financially. We have not, so far as I am aware, made any new and startling discoveries, but as even the Odontological Society rarely brings forth anything of this nature more than once a year, we should not be discouraged, but work steadily on, comforting ourselves with the thought that our work is quite equal to that of other students' societies, and trusting to time to bring us the rare individual known as a genius.

Among the subjects which I hope to see taken up in the ensuing year, are Caries, including erosion, and Dental Chemistry. These, particularly Chemistry, are, I regret to say, little understood by us, and I think that our curriculum is very much in fault in not paying more attention to the scientific work, more particularly appertaining to our specialty. The tendency of the present day is to convert the dentist into a surgical specialist, like an occulist or a throat specialist. But though we give all honour to those men who take the double qualification, it seems to me that the time spent in learning the anatomy of the legs, and the treatment of all the ills that flesh is heir to, could be more advantageously expended in learning some things which will be of some use to us afterwards. The occulist or the throat specialist has probably gone through the whole of his hospital course before he decides that he has a taste for one particular specialty, but the dentist has decided to be a dentist long before he goes to hospital at all, so the two cases are not parallel. Let us raise the standard of the dental diploma by all means, but let it be by a course of training, and a test examination which will ensure efficiency, instead of insisting upon an honorary degree.

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* Read at the Liverpool Dental Students' Society.

Now for a word of advice, and I have done. You will all of you soon be qualified, and upon you will devolve the duty of maintaining the honour of the profession. Many of you will go into old-fashioned practices, and you will find that a large proportion of your patients are accustomed to have their teeth patched up with plastics, rhizodontropy holes made, instead of root fillings, useful teeth extracted, &c. The temptation to go and do likewise will be very great, particularly if you are in a busy country practice. Your patients will tell you that their old dentist never used to hurt them, and they will fight against your rubber dam and your elaborate gold work. Now I don't want you to insist straight away upon doing this good class of work, for if you do you will lose your patients. But put in a few plastic fillings, till you have gained your patients' confidence, then do a little really good work, and then go on with the plastics for a while. Your patients will soon find the comfort which they derive from your work, and thus you will educate them up to the high standard which you are all striving to attain while at Hospital. Do not, however, go to extremes, and treat your patient as you would a block of wood, but while doing good work, try and do so in the gentlest manner possible.

Another point upon which we must be firm is the extraction of six-year-old molars or bicuspids, when necessary, to give space. We must not be afraid of our own opinions, although it is often very hard to convince a patient that it is advisable to lose sound teeth, but we must remember that we receive fees in return for our knowledge and skill, and we are absolutely bound to say what we think ought to be done. You may depend upon it that the man who asks himself "What ought I to do in this case?" instead of "How shall I best please my patients?" is the man who will eventually make a name.

OBTUNDING SENSITIVE DENTINE.

By HENRY. BARNES. D.D.S.

After the dam is applied I take Dr. Black's 1-2-3 mixture or oil of cassia, wintergreen, or other essential oils, on a pledget of cotton, placing the cotton in the cavity, and with my chip syringe, having a platinum point, draw the heated air from the lamp, heating the nozzle of the syringe red-hot, blow gently on to the cotton until the oil is driven from it. This is done repeatedly, until the cotton looks as though scorched by fire. Now, removing the cotton from the cavity we are able to cut out quite a considerable amount without pain to the patient. This is especially true of the leathery white, or light brown, decay found in the teeth of young children.

Ohio Dental Journal.

British Journal of Dental Science.

LONDON, MARCH. 15th, 1893.

OUR ORIGINAL ARTICLES.

THE communications which we publish in the first part of the present number of the Journal may perhaps be taken as fairly typical of the value of the original matter which we are in the habit of regularly placing before our readers. It so happens, however, that they are, in the present instance, reflections from professional societies which meet for the purpose of recording and discussing matters relating to the Science and Art of Dental Surgery, and one of the advantageous points which such public communications have (compared with other, more or less personal or or private, communications) is connected with the fact that we are enabled to publish, in the same issue, the remarks and criticisms which the views put forward may give rise to when re-acting upon other minds. At the same time we always welcome the efforts of individual members of the profession, and, when occasion demands, our correspondence columns enable ideas, so enunciated, to be commented upon.

As will be seen, Dr. MAUGHAN was able to place before the members of the Odontological Society of Great Britain a restatement of the hypothesis that dental irritation may give rise to the manifestation of symptoms more or less remote from the tooth affected. This is a subject which appears to have interested dentists for many years past, and which still continues to exercise the dental mind, at home and abroad. Perhaps the most telling cases recorded are those where the dental lesion does not give rise to sensations enabling the patient to draw attention to a tooth as a possible cause, and where this is only discovered late in the history of the case.

Dr. Maughan points out, what is apparently a paradox, that consciousness of sensation is not necessarily co-existent with passage of sensations. From previous papers read before the same Society by other authors, we are prepared for the existence of divergent views as to the possible relationship between disturbance of vision and tooth disease. From the intimate connection between nerve trunks, and the occurrence of conduction, transference and radiation of stimuli, most are prepared to admit that subjective sensations and reflex phenomena may be present in other parts of the body than the jaws, although the cause is a strictly dental one. The difficulty lies in believing that such a focus can produce something more than a motor or sensory functional disturbance, and that an organic modification of tissue may result in a permanent structural change. Still, as the author suggests, in one group of phenomena, although pure inhibition as a rule does not do much permanent harm, yet a hysterical paraplegia may become absolute and permanent after some years.

At the Manchester Odontological Society, Mr. G. G. Campion read a most interesting account of some of the abnormalities of teeth as shown in the collection recently seen in his city. His remarks are well worthy of attention, and considering the part he took in the formation and arrangement of the museum, no better exponent could be found. Especially valuable are his suggestions with regard to the collective recording of the treatment of irregularities, and we hope that some practical result may be the outcome of his appeal.

Mr. R. H. Bates, in his Address to the Liverpool students touches upon the topic of additional qualifications, and is in favour of especially maintaining a high standard of efficiency for the dental diploma. His advice to young practitioners, as to the policy of training old-fashioned patients in the way they should go, is happily conceived, although, if we are not mistaken, there are practitioners who would have none of such methods, and who, rather than offer a temporary sacrifice to a plastic idol, would refer their obdurate patient to Mr. Bates for treatment.

THE EDINBURGH DENTAL HOSPITAL AND SCHOOL.—It will be remembered that last year this Institution was incorporated, and registered under the sanction of the Board of Trade. We have now received a copy of the Report by the Directors to the first annual ordinary general meeting, and find it very interesting. The number of cases treated during 1892 shows an increase, and we are glad to notice that special attention is drawn to the relative proportion of cases in which teeth were preserved. 3,200 persons out of the total of 8,910 who attended, had teeth filled. A mechanical department has been added to the School, and the number of Students on the practising list is 30. Considering the amount of work done we regret to find that the ordinary contributions from the general public scarcely come up to past amounts; but the financial position of the Institution is maintained in other ways, and there is a balance on the right side. £1,000 has been set aside towards the building fund, and a particularly noteworthy donation is that of £200 from the Lord Provost, Magistrates, and Town Council of Edinburgh. This sum was voted from the Government residue grant, and may be taken as in some sense an official recognition of the good work being done. The Directors naturally hope that such an example will stimulate others to follow in the same path. New premises have been found at 31 Chambers Street, and the purchase was completed at the cost of £4,000. A considerable sum will be necessary to reconstruct the building for the purpose of a first-class Hospital and School,so that from £7,000 to £10,000 will be required, and we shall indeed be glad to hear that the Directors' appeal to the public has met with the success it deserves.

A MANIA FOR OPERATIONS.—Not, of course, on the part of the operator, but in the mind of the patient.

Some cases, recorded by Leyden, are quoted in the epitome of the *British Medical Journal*,where a curious craze on the part of the patients to have operations performed upon themselves was a marked symptom. The subjects are usually women, most of them of a hysterical temperament, but in one case an intelligent gentleman insisted on having his abdomen opened in order that his stomach might be examined.

A woman had gastro-enterostomy needlessly performed; on another occasion had her ovaries removed, and then six months later wished to be opened again to see if anything had been left behind. It seems to us that the surgeons abroad must be more obliging or good-natured, for, so far as we know, patients do not succeed in persuading our operators to indulge their curiosity. Well-trained dental patients sometimes give rise to a suspicion that they must be approaching the border-line of such a furor as that indicated by Leyden, but the anxiety of having fillings inserted has not yet become so common as to give rise to any prolonged anxiety on the part of dental surgeons. We have recently met with some cases of dental neuroses reported on the Continent, and were especially struck with one instance of a young American dentist who unduly concentrated his attention upon his teeth.

Visit of Professor Virchow.—This distinguished scientist will deliver the Croonian lecture at Burlington House, on the 16th inst., upon "The Position of Pathology among the Biological Sciences." He will afterwards attend a banquet, to be given in his honour, at which Lord Kelvin, the President of the Royal Society, will take the chair, and be supported by the Presidents of the two Royal Colleges. An imposing, and yet enthusiastic, attendance may be expected to render international homage to one who has made mankind his debtor.

A Midland University.—In the speeches made at the celebration of Founder's day at Mason College, Birmingham, references are to be found as to the desirability of securing a university worthy of the wealth and intelligence of the Midland metropolis. Now that the Queen's Faculty of Medicine has become united to Mason's College, teaching in arts, science, and medicine is carried on in such a manner as suggests the possibility of adding local examinations and the conferment of degrees. The large number of Medical Students attending the Queen's Faculty was perhaps the principal factor in bringing about amalgamation with Mason's College, and it is interesting to find that in connection with the medical charities of Birmingham, one half of the medical men have been educated in the local school. As the Dean points out, this is a striking example of the confidence reposed by the governors of local institutions in the medical teaching afforded in the city.

EAST INDIA MYRRH.

White Castile soap (shavings) ...	12 oz.
Carbonate of potassium	2⅛ „
Powdered rhatany ...	1 „
Glycerine	30 „
Sugar	30 „
Water	q. s.
S.V.R.	1 gal.
Oil of cinnamon (true)	⅛ oz.
„ gaultheria ...	6 drs.
„ anise	6 „
„ cloves	½ oz.
„ peppermint . .	⅛ „

Put the soap in 1 gallon of cold water, and add the carbonate of potash. Dissolve the oils in the S.V.R. Add the sugar, glycerine, and rhatany to 1 gallon of cold water, and to it add the soap solution and the oil mixture. Lastly add cold water to make a 5-gallon mixture. Shake daily for two weeks, then leave undisturbed for two weeks. Syphon off the clear solution and filter the rest.

Abstracts of British & Foreign Journals.

IRREGULARITIES OF THE TEETH.

By EUGENE S. TALBOT, M. D., D.D.S.

I have frequently observed cases that were disfigured and ruined for life, by incompetency. Probably many persons have seen similar cases. Three cases that were mismanaged have come under my care during the past twelve months; the first one a woman of fine appearance, who had lost her upper lateral incisors and called upon a dentist for treatment. He attempted to draw the cuspids into close proximity to the central incisors. The woman had given her entire vacation and all her money for this operation, and then it was only partially successful. That such an operation was wrong needs but little argument. The expression of the mouth was pointed, and the features were otherwise distorted. Had a small plate bearing lateral incisors been inserted in the space, instead of having had the cuspids moved, the facial expression would have been improved instead of injured.

Case No. 2 is that of a young man with what seemed at first and what an old practitioner had regarded as a "prognathous lower maxilla." This I found upon inspection to be caused by arrested development of the upper maxilla. This dentist had spent five years in trying to reduce the deformity. It was fortunate, however, that he was unsuccessful, for had he succeeded the deformity would have been greater than it was. Instead of moving the lower teeth back, the upper teeth should be moved forward. In six months' treatment by this plan, the teeth were correct and the face greatly improved.

The third case was one that occurred in my early practice. To make room for the anterior teeth to be carried backward, I extracted a tooth upon one side only. The result was that the incisors moved around to that side, causing an unsightly appearance. Fortunately, however, I have been able to correct this condition by extracting one on the other side. These mistakes are frequently made by dentists. Of course, I do not wish it inferred that two teeth should be taken in all cases.

From these cases, as samples of many, we see that to correct irregularities of the teeth we should have a broad knowledge of the human body. It is not sufficient that a dentist understands mechanics and physics; he should have considerable knowledge of high art. In truth, the specialist should be what may be called a scientific man,—well read in evolution, anthropology; ethnology, as well as in anatomy of the human face. No dentist ever lived whose intellect was too great or whose education was too extensive for the profession of dentistry. Of course he should understand physiology, pathology, and especially the subject of absorption and deposition of new matter, and the influence that the condition of the patient has upon these two processes, and also the unfavourable results that may arise from too much irritation from moving the teeth too rapidly. He should also have the kind of education that will enable him to observe any derangement of the system that may result from strain,—a result that is especially liable to occur in delicate children at an age when teeth can be moved most easily. Such knowledge will better enable him to discover the cause of the deformity, and in many cases aid him in deciding the kind of treatment that will best correct that deformity. Not long ago I heard of a young lady being confined to her house, and part of the time to her bed, for two years, as a result of having her teeth regulated. This case was treated by a dentist who thinks it is not necessary to know anything about general medicine in order to practise dentistry, and he is a teacher, too.

The Dental Cosmos.

GREAT ERAS IN LIFE.

By W. C. Barrett, M.D., D.D.S.

The general law is that when one function is early called into action, all the others are influenced by the same precocity. If the boy or the girl reaches puberty at an unusually early age, the other developmental eras have also been hastened. If the teeth are cut before the usual time, it is probable that the whole digestive tract is in a like advanced condition.

Undue stimulation may cause premature development of organs or sets of organs. These are not, however, evidences of strength, but rather indications of weakness. The intellect through abnormal conditions, may be awakened too early, and the child may exhibit signs of mental power that should come only with the regular and co-ordinate growth of the rest of the system. Such precocity will not be accompanied by the usual indications of development in the advent of the teeth, because it is something apart from the regular processes of nature. Unless there be a steady progression, with the ripening of all the powers and functions of the body together, it is an abnormal and unhealthy condition, and the lack of functional symmetry will surely end in a cutting short of the periods of healthy growth, and a final breaking down of the whole, from lack of sympathetic and harmonious action. If the teeth which should mark the advent of the epochs in man's life are erupted prematurely, and in advance of the periods which they were properly destined to indicate, their existence will doubtless be brief, for the ripening of the other functions upon which their nutrition and consolidation depends is insufficient for their support. The teeth that are occasionally found in the mouth at birth are usually soon lost. That man only is the perfect man in whom there is an even balance of the functions and organs. Progression must be synchronous throughout. Undue precocity is as much a diseased condition as retardation. If it be confined to a single organ or set of organs, it means that the disturbed functional activity is due to some untimely stimulation, and that it is at the expense of other organs.

The Dental Review.

IMPERIAL TOOTH-POWDER.

Precipitated chalk ...	8 oz.	Powdered orris-root ...	½ oz.
Powdered Castile soap...	1 ,,	Oil of wintergreen ...	½ fl. dr.
,, cuttlefish bone	½ ,,	*Colouring to suit	

To the chalk add ½ oz. of the colouring by trituration, sift through an ordinary sieve, and set in a warm place until thoroughly dry. Mix the soap, cuttle-fish, and orris-root; to this add the oil of wintergreen, then add the coloured chalk. Run all through bolting-cloth. If the pink colour is not deep enough, add more colouring before sifting.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, February 6th, 1893, Mr. Bowman MacLeod, L.D.S.Edin., President, in the chair.

The minutes of the previous meeting were read and confirmed.

The President said that the Council had recommended Mr. W. Imrie, of Paris, for election as an Honorary Member. He had been for many years connected with the Society, and had at one time been its Vice-President; he had now retired from practice. Mr. Imrie was elected by acclamation.

The President announced that Mr. H. E. Goddard, of Oxford Street, Nottingham, having sent his obligation form duly signed, was now admitted as a Non-resident Member.

The following were balloted for and elected Resident Members of the Society:—Frederick Walter Barrett, L.D.S.Eng., 42, Finsbury Square, London; Ernest Henry Lewis Briault, L.D.S.Eng., 30, Richmond Cresent, Barnsbury, N.; William Thomas Trollope, L.D.S.I., High Street, Tunbridge Wells and London.

Mr. F. W. Richards, L.D.S.Eng., of 27, Paradise Street, Birmingham, was nominated for Membership.

Mr. J. **Mansbridge** communicated two cases—one of imperfect eruption of temporary teeth, and the other of retention of temporary teeth late in life.

He said: The models, though slightly different, present one condition common to both, viz., the imperfect eruption of certain temporary teeth. The first model is that taken from a boy 4½ years of age, in which the left upper first temporary molar is seen to have the cusps of the crown only through the gum, while the second temporary molar is in its normal position. The second models (upper and lower) are taken from the mouth of a young lady, aged 20. In the upper jaw a similar condition to the above exists with regard to both the second upper temporary molars. These models are also of interest in showing the retention of the four temporary second molars and the upper left temporary canine, whilst demonstrating the effect on the permanent series and the bite.

The reasons for showing these models are: (1) They appear to be of sufficient interest. (2) It would be interesting to know if any Member of this Society holds any view with regard to the cause of this imperfect eruption, a state of things which often applies to the six-year-old molars, this condition being quite independent of insufficient room. (3) I should like to hear what treatment would be considered advisable with regard to the second case, taking into consideration the age of the patient, and the very imperfect articulation.

Mr. W. E. HARDING related a singular instance of an artificial denture lodged in the pharynx, and afterwards removed by the patient herself. The particulars were as follows:—The woman went to sleep in an armchair after supper and awoke suddenly with a sense of suffocation; the difficulty of breathing increasing, a medical man was sent for, but on his arrival he was not made acquainted with the fact that she wore artificial teeth. He introduced a probang into the stomach, and no doubt in doing so dislodged the denture from its position, so that the obstruction to respiration was removed to an extent sufficient to allow of the patient breathing more comfortably. He then left, but visited the patient every day for a week; during the whole of that time, however, he was not informed that she wore artificial teeth. This went on for three weeks, and the medical man was ultimately dismissed, he being under the impression that the condition was due to spasm. The patient then came to Mr. Harding, and saw his colleague with the object of having some new artificial teeth. They suspected that the teeth which had disappeared were still in evidence, and advised her to go to a medical man. She did not do that, however, but contrived herself to remove the plate from her throat through the mouth by means of her fingers, having managed to get a finger nail under one of the bands. The case was a gold one, carrying seven teeth, and had been worn for many years. A remarkable circumstance in connection with the case, Mr. Harding thought, was the fact that the plate had been tolerated for so long without setting up ulceration. On questioning the woman, who, he remarked, was of a low order of intelligence, he elicited the fact that her failing to consult a surgeon was due to the fear that she might be "cut about" in some way.

Mr. S. J. HUTCHINSON and Mr. QUINBY suggested that it would be very interesting to have a life size illustration of the plate for publication in the *Transactions*.

Mr. **Albert** mentioned a case of subluxation of the jaw, the patient being present. He was a man aged 42, who for eight days had experienced considerable discomfort in opening his mouth, and when he did so the movement was accompanied by a very audible click. Mr. Albert had been unable to detect any cause for the condition; there was no neurosis of any kind, and he regarded the case as almost unique in a patient of that age. He should be glad to receive any hints with regard to treatment; beyond massage he could suggest nothing.

The President then delivered his Inaugural Address, as follows:—

In accepting the office to which you have so kindly and unexpectedly elected me, I cannot refrain from expressing my deep sense of the responsibilities which devolve on him who occupies so important a chair as that of the Odontological Society of Great Britain.

In my own person, I feel that I shall fall short of your just expectation, but with the hearty support, which has already been promised, of the Vice-presidents and the other office bearers, I trust that at the close of the session, when I demit office, and hand it over to my successor, I may retire feeling that the interests of the Society have not suffered during my tenure of the presidentship. I further trust you will not charge me with indulging in any false modesty when I say that I feel myself unworthy of this great distinction at your hands, and that I was constrained to accept the nomination, and now the election, in so far that I am the most available medium through which you express your respect for, and your appreciation of, your fellow-members north of the Tweed.

Although the first resident practitioner in Scotland, upon whom this distinction has been conferred, I am by no means the one who has done most to earn this acknowledgment at your hands; and you will pardon me, if for a moment I refer publicly to two men of my own city who would have done the office more credit, whose work, in connection with dental science and dental progress generally, has been much greater than mine has been, and whose age commands preference. That neither is in this chair to-night is, however, no fault of yours. In the one case, that of Mr. David Hepburn, the inscrutable hand of Providence has been laid heavily upon him in the fulness of his professional manhood, and by depriving him of his eyesight, has laid him aside from active work at a time when the results of his labours were reaching full fruition, and there was every prospect of a rich and well-earned harvest. Although not the originator of the scheme which led to the formation of the Odonto-Chirurgical Society of Scotland, to him belongs the credit of founding it and nursing it until it grew, under his fostering care, into the recognised centre for the propagation of dental science, and the promotion of professional culture and intercourse in the north. A man amongst many, an expert in his profession, of wide and varied culture, slow to offer advice, but ever ready and willing to give it when circumstances required it, always to the front when work was required of him, he still takes a living interest in all things pertaining to the profession, and frequently makes a welcome appearance at our Odonto-Chirurgical meetings, listening with all the keenness and interest of youth, to the papers brought before the Society. Although thus deprived of wearing the honour which I now enjoy, you have not been slow to recognise his worth, and have given him the more rare compliment of Honorary Membership.

Of the other, Mr. Andrew Wilson, I cannot say too much. Himself the son of a very skilful dentist who practised in the earlier years of the present century, he is an old practitioner, a zealous and active member of the Odonto-Chirurgical, self-sacrificing in the interests of the profession, a good naturalist, and a specialist in comparative dental anatomy. His acceptance of this honour, which you placed at his disposal, would have been a well-deserved crown to a long and honourable career in the ranks of our profession, and he would "by oor ain folks at hame" have been welcomed as a fitting representative of the scientific culture of the profession in Scotland. Like many other good men and true, he is sometimes embarrased with an excess of diffidence, which prevents him seeing himself as others see him, and chains him to thefireside or the laboratory at a time when his fellows call upon him to occupy a place on the dais. His presence with us to-night is another proof, added to the many I already have seen, of his kindly nature; and I can truly say that in all matters professional, I feel myself honoured in being associated with him.

On looking over the TRANSACTIONS OF THE ODONTOLOGICAL SOCIETY, and scanning the inaugural addresses of previous presidents, I find that the available field has been pretty well swept, and that there is really nothing of a general character left for me to garner. On the other hand, as all my hobbies for some years past have been without the pale of original research, I feel myself incapable, within the short period between the time of my election and now, to venture upon a scientific topic and treat it in a manner worthy of this Society.

What, then, can I do in obeying the unwritten law which age and custom have rendered imperative? Fortunately for me, as the first President you have chosen from Scotland, there is one subject of which I know a little, and which has not yet been brought under your notice, and being a Society which has for one of its objects the better knowledge of fellow-practitioners, it may please you to hear something about the growth of dentistry in Scotland.

To trace the rise and progress of dentistry in Scotland, we need not for practical purposes go further back than 1760, or thereabouts, when we find Mr. James Rae a member of the Incorporation of Surgeons, and of which Incorporation he was deacon in the years 1764-65, practising dentistry in Edinburgh. He acquired a more than local reputation, and was the first to rescue the practice of dentistry from the hands of the artificer, and place it upon a scientific and medical basis. He gave lectures on the diseases of the teeth, and by example and precept, did everything in his power to rescue this department of surgery from the hands of the ignorant and unskilful, who, at that time, claimed a monopoly of the tooth-healing art. To show that he was a man of no mean standing, and skilful in general surgery as well as in dental surgery, I may mention that in 1779 he was requested by his students to deliver practical lectures on the cases in the Royal Infirmary, which request being highly approved by the managers of the infirmary and the Incorporation of Surgeons, he delivered two separate courses in each year for several years, and thus became the founder of the clinical side of surgical teaching.

His younger son, John Rae, who assisted and succeeded him in practice, had even more skill, and acquired a more brilliant reputation than his father. He also was a member of the Incorporation of Surgeons, and after it became a Royal College, was president of that body in 1804-5. He was reputed a good surgeon, but exclusively confined himself to the practice of the dental branch, and was certainly the most skilful and scientific dentist of his day. It is said that he peculiarly excelled in extracting teeth, so much so, that

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and their services sought after.

nay be regarded as the direct successor
s a man of pre-eminent ability and of
entific studies. Born in 1791, he went
nd commenced the study of medicine in
of Dr. Barclay. Having gained the
mpleted his dental training, and in 1815
e at 32, St. Andrew Square, Edinburgh,
ne a Fellow of the Royal College. He
l dentist but a skilful surgeon, and we
acting as right-hand man to Wardrop,
rguson. John Goodsir, the anatomist,
nder Nasmyth, and often declared that
skill as an anatomist to his mechanical
t's bench. The friendship of these two
ife, and they frequently assisted each
arch. Nasymth died in 1870.

ttempt, since the days of the elder Rae,
ion of the future dentist out of the hap-
ystem it could be called—inherent to
ible instruction, was made by our learned
Dentist to the Queen in Scotland, Dr.
1856 commenced a course of lectures on
connection with the Royal College of
s supplemented by a course of clinical
chmond Street General Dispensary, and
ning of a special dental dispensary at No.
in the year 1860. From this period, so
ncerned, we may date the uninterrupted
tional movement the results of which we
ying; for they not only instilled better
ge in a systematic fashion, but, bringing
se intimacy in the acquisition of know-

ledge, there was developed a feeling of fraternity and charity which pervaded their intercourse in after life.

These lectures paved the way for the establishment of a kindred, but not a rival institution to the Odontological, which, though restricted in its sphere of territorial action, and necessarily very limited in its membership, has yet played its part nobly, and done much for the common cause we have all at heart. The idea of such a Society for Scotland was first mooted by Dr. John Smith in 1865, in which year he prepared and submitted to a few members of the profession a constitution and bye-laws. The scheme, however, did not meet with the support anticipated, and was therefore at that time abandoned. It lay dormant for a little while until Mr. David Hepburn took the matter in hand; and at a meeting, held March 13th, 1867, it was successfully launched, and became an accomplished fact. Difficulties it had to contend with, external and internal, but, thanks to the tact and catholicity of its office-bearers, it overcame them all; and as it grew in years it grew in strength and usefulness, until now it has become in its own unostentatious way the recognised centre of dental light and leading in Scotland. Only those who knew the profession before the seventies can estimate the height and depth of its beneficent influence from the Tweed and Solway in the South, to Cape Wrath in the North. From the 13th of March, 1867, till now, it shows an unbroken record of stated meetings, where the interchange of thought and the free presentation of experiences have consolidated, exalted, and expanded the power of the profession for doing good, and brought about a friendly unity of action, which pervades the private as well as the professional intercourse of its members. Robert Nasmyth was its first President, though he never occupied the chair. The reason of this is found in a letter to the Secretary, in which he says:—"Kindly excuse my resigning the distinguished office you have conferred upon me. I have an idea that it is unsuitable and unbecoming in one to hold such a position and not do the duties; and I feel at my time of life, and in my state of health, I am quite incompetent for any outside work." The work, however, which he had already done was a sufficient warrant for continuing him in office till the termination of his year. By his original research, and by that done in conjunction with Goodsir, he, for a long period, occupied a foremost position in the surgical and dental world, and now, when dead, his name is still an honoured one, and his memory is green. Some idea of the extent of his labours may be gathered by examining the many specimens which he had collected and classified in his private museum, which may now be seen in the hall of the Royal College of Surgeons of Edinburgh.

The first paper laid before the Society was read by Mr. Williamson, late of Aberdeen, "On the Breaking Strain of Vulcanite"—a subject which at that time was novel and of intense interest; while the last published *Transactions* for November and December, 1892, contained contributions on photo-micrography and the growth of dentine, by G. W. Watson and Dr. Robertson.

The passing of the Dentists' Act in 1878 found Scotland prepared for its reception. The Education Committee appointed at a meeting held in Edinburgh under the presidency of Sir John, then Mr. Tomes, on the 6th of October, 1877, succeeded in inducing the Royal College of Surgeons of Edinburgh to institute a Licentiateship in Dental Surgery; and in November of the same year they opened the premises, 30, Chambers Street, as the Edinburgh Dental Hospital and School, the managers of the old dispensary, which at this time was located in Cockburn Street, falling in cordially with the views of the Education Committee, and handing over to the new institution their whole goods, chattels, and money.

For ten years the Hospital and School remained in Chambers Street, slowly extending the foundations of what, I hope, will yet be one of the most famous schools in Britain, until the number of students had so increased, and the number of patients become so numerous, that larger premises were required, and it became necessary to remove to the present buildings in 5, Lauriston Lane.

From these, owing to the needs of the Royal Infirmary, of which incorporation we are tenants, we are shortly to be evicted, and learning wisdom by experience we have just concluded arrangements to secure a site upon which we may build a hospital and school, fitted with all the modern requirements of a great teaching institution, worthy of the profession, and creditable to the city of Edinburgh. The Faculty of Physicians and Surgeons of Glasgow instituted a licentiate shortly after the Edinburgh College, and the profession shortly afterwards opened a dental hospital and instituted classes in connection with the Andersonian College of that city.

And now, having intruded thus much upon your forbearance with matters provincial, I turn my back for the time being upon Scotland and become cosmopolitan. Looking around and abroad, I see good cheer for the future of our profession. The seed sown by our forefathers is bearing good fruit. All over the world there is an awakening to the fact that dentistry is more than a handicraft, and that general culture and medical knowledge, as well as special training, are the absolute necessary equipment of him who would wage war against the diseases of the teeth. Where schools were, these are being extended and remodelled; where schools were not, there they are being established; and the absolute necessity of having a strictly defined course of education, followed by a thorough examination, is being recognised by the people and their representatives, as well as the fact that dentistry is what its leaders in the profession claim it to be—a branch of medicine and surgery. The outgrowth of such a conviction is shown in the increasing importance of such societies as this, and their endurance can only be ensured by the members uniting themselves together in the all-embracing bond of the pursuit of truth, and never resting satisfied until they wring from Nature the secrets which tend to the well-being of her children, and to the healthy preservation of the various organs for the performance of that functional service required of them during the "seven ages of man." Such a consummation is yet far in the distance; and we might well despair of its ever being reached if we simply dwelt in contemplation upon the little progress which has been made during the æons since the world was, and failed to mark the rapid strides which our modern *savants* are making in unravelling the relationship between cause and effect. The mysteries of Nature are no longer sacred, awe-inspiring secrets to be let alone, but shrouds of ignorance which provoke to honest, painstaking, reverent endeavour to remove the barrier. Each man, then, to his post: each society to its own domain; and ours be it to make more perfect the application of our specialty by removing the barriers which yet stand between the perfect knowledge of the genesis and growth of the teeth, and the etiology of dental diseases, and when we have mastered these we may hope to have at least touched the magic circle which surrounds *dens sana in corpore sano*. In the meantime, we can apply our greatest energies to alleviating the ills that teeth are heir to, and give our daily thought to the restoration or substitution of the defective organs. My predecessor in office, Mr. Mummery, in his review of the work of the past year, has, I think, failed to emphasize sufficiently the fact that he has done much to aid progress towards perfection, by his original investigations and observations on the growth and nature of dentine. I trust that he may be spared to continue and complete his investigations. We cannot all be such men as Mr. Mummery, but we can do that which lies to our hand honestly, and we can further assist those who are engaged in original research by observing and recording.

One subject which has received much of our attention of late, the subject of anæsthesia and the relative safety of various anæsthetics and their combinations, has resulted in much good; but this good may be still further intensified if the invitation of the Committee on Anæsthetics of the British Medical Association is largely and unbiassedly responded to by the advocates and users of the various agents. But that catechetical investigation will not be deemed complete unless the returns embrace the result of the use of anæsthetics in dental as well as general surgery, and complete returns are given from the centres where chloroform is used upon the lines laid down by Simpson.

The question of technical training in certain handicrafts, prior to, or concurrent with, the method of teaching by apprenticeship or pupilage at present in vogue, is an educational matter which has engaged the attention of some of our members; and we have even had an elaborate scheme published, which proposes to do away with the ordinary workroom training, and teach the whole art and science of dental mechanics in a special technical college, where allied handicrafts and constructive dentistry will be taught in certain proportions, with the view of enabling the pupil to master the manipulative dexterity required of a dentist, without confining him in his training to the more or less routine work which is usually to be found in a number of private workrooms. The scheme is an ambitious one, and displays the ingenuity, versatility and energy of its author, and may in a generation or two become an accomplished fact; but I hardly think that we can say that the time is ripe for us to admit it as within the sphere of practical application. We must first exhaust the opportunities which are provided in our dental hospitals of supplementing the ordinary workroom training by a theoretical and practical course. When we find that this course fails to meet the desired end, then we may fall back upon or rise up to the advanced theories of Mr. Cunningham, a gentleman to whom the profession is deeply indebted for much good freely done in its behalf.

In conclusion, might I throw out an idea for your consideration, which, I think, under certain conditions, might lead to the betterment of the average standard of our practice, by enabling every member of our profession more readily to keep in the forefront of modern improvements, This, I think, might be attained by this and other kindred Societies establishing a travelling fellowship, the holder of which, after visiting a selected number of the chief schools of Europe, or of America, or of the Colonies, would upon his return devote a certain portion of time to the giving of post-graduate lectures and demonstrations in the chief cities of Great Britain and Ireland. I do not at this time venture upon any details as to working the scheme, but simply throw out the suggestion that you may give the subject consideration; and if, after it has simmered in your minds for some time, you are favourable to the principle of the idea, we may consider as to the best method of securing a practical issue.

The President then called upon Dr. Maughan to read a paper on "Remote Pain in Dental Disease," which we publish on page 241.

DISCUSSION.

Mr. C. S. TOMES remarked that he had very little to say; it was a paper which one could hardly discuss at such short notice; the various points wanted a great deal of thinking out. All that he could do was to mention an individual case which had some bearing upon two or three things which Dr. Maughan had brought forward. A patient, a lady, came to him, and was seen by himself and his colleague Mr. Baldwin, who complained of severe pain felt down the arm, but she could not more strictly localise it. Both Mr. Baldwin and he were rather puzzled to know what to do, but they decided to destroy the pulp of a suspicious tooth, with the result that the pain disappeared. In two or three years she came again, complaining of a recurrence of the pain which now seemed to be due to periosteal inflammation of the tooth originally filled. Appropriate treatment again secured a subsidence of the pain.

Two points in the case were worthy of notice. In the first place, we had an instance of remote pain being referred after a lapse of years to a familiar track, and secondly, we here found two attacks of pain of a precisely similar character, occurring under different pathological conditions of an individual tooth.

Mr. **Cornelius Robbins** thought that in general practice the cases which would illustrate the paper were of such frequent occurrence, that the difficulty was really to find a case that would be of sufficient interest. He happened to be looking through one of his old note books and came across a case which occurred three years ago ; it was that of a lady, aged about twenty-six, who came to him with a history of very severe intermittent neuralgia. After three months treatment she suffered from trismus, and was, therefore, advised to consult a dentist. He found the wisdom tooth very much inflamed, and advised its removal; the patient was given gas, and she, as well as the doctor present, supposed the whole tooth to have been removed. Seeing that she had a return of the neuralgia, and in just as severe a form, it was supposed to be constitutional. Another year went by and she was advised to go to Mr. Robbins, who found the second molar had no antagonist, and stood very high, and behind that there was a very puffy condition of gum. She had in addition to her other troubles pain in the right arm and severe eczema. He probed behind the second molar suspecting a buried wisdom tooth, and found that a greater part of the tooth was there. He advised her to allow him to remove it, to which she consented. Under the root were found evidences of abscess. The trouble entirely subsided after about six weeks, and the eczema also cleared away, but dental treatment found but scant acknowledgment at the patient's hands, who attributed the cure to a " new ointment " she had been using.

Mr. **W. A. Hunt** (Yeovil) wished to remind the Society that some few years ago, a paper, similar to the one to which they have listened, was read by Mr. Power, and a most interesting paper it was. Following that at some distance, they had a paper read by Dr. Job Collins, who was of opinion that eye troubles could very seldom be traced to dental causes He (Mr. Hunt) could not say that Dr. Collins' arguments were very convincing to him, and he should have been glad if he could have been present that evening. He would say that he regarded Dr. Job Collins' paper as a very valuable one, because it would make them look round and see what ground they had for the faith that was in them ; he said for the faith that was in them, because these cases of remote pain in conjunction with dental trouble were so frequently occurring, that they could not but regard them as cause and effect. He would like to mention a case in the late Mr. Sercome's practice. The patient, a female, was suffering a good deal of neuralgic pain in the neighbourhood of the uterus, and she also had a tooth which bothered her very much; the instant the tooth was removed, she had most excruciating pain, which lasted only a few minutes, and never returned.

Mr. ALBERT believed that Mr. Power's paper, as also Dr. Job Collins', was on oculo-dental reflexes only. He (Mr. Albert) was one of the unfortunate ones who agreed with Dr. Job Collins. He had only had two cases of possible oculo-dental reflexes, both of which might reasonably be accounted for without reference to the teeth. The first, a lady with ptosis came to him, and he removed a tooth, after which she recovered; but as she was at that time put on anti-syphilitic treatment, the diagnosis became doubtful. A second case, that of a child who had phlyctenular ulceration in one eye; she had been to an ophthalmic surgeon, and was treated for some time. She was then sent to Mr. Power, who attributed the condition to a carious upper premolar. The tooth was removed and the trouble cleared up; it was cited as a case of oculo-dental reflex. Only during the last week he had had two cases which bore on the paper which they had listened to; one a man aged 35, who suffered from frontal headaches, and also pain in the chest, which, coming on after meals, indicated dyspepsia; he had an upper molar which was carious, and Mr. Albert removed it, and the pain in the chest was much alleviated. Another case was one of a girl, who consulted him a day or two since, suffering from difficulty in swallowing; she was anæmic, but otherwise well conditioned. Her trouble, she said, was due to two molars very extensively diseased. He took out the teeth, and she reported that she was absolutely free from pain, and able to swallow with ease. There was one other point he should like to allude to, viz., the occurrence of what might be termed assumed pain. Instances of hysterical toothache were not rare, and pain in various parts of the body, with perfectly sound teeth, would often succumb to a proposal to take out several teeth.

Mr. Albert also wished to mention that urethritis had been known to occur synchronously with the eruption of teeth—a fact which was borne out by similar experiences in veterinary practice.

Dr. **Maughan** said that he had very little to reply to, but wished to thank the members for the experiences given in the discussion. In connection with oculo-dental symptoms, he had paid a good deal of attention to one line of enquiry, viz., whether failure of sight could be traced to dental irritation; but hitherto he had never been able to obtain affirmative evidence.

A formal vote of thanks was given to the reader of the paper, and those who had brought forward casual communications.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual Monthly Meeting of the above Society took place at the Grand Hotel, Aytoun Street, on Tuesday evening, the 3rd January, 1873. The President, (Mr. P. Headridge) was in the chair.

Casual Communications.

Mr. G. G. **Campion** said that it was usual to paint models of cases of irregularity to make them show more plainly, and to add to the appearance. He had hitherto used vermilion and Chinese white to colour his models, but from experiments he had found that an easier and better plan was to colour the gum portion with flesh-coloured Aspinall's enamel, and afterwards when thoroughly dry, dip the model in Stearine. The result was an even distribution of colour, and the model could be washed or wiped with a damp cloth without any ill effects.

Mr. **Collett** exhibited a model of a patient's mouth, where extraction of the six-year molars had been performed on one side of the mouth only. These teeth were extracted in September, 1889, and the patient—a boy—directed to come again to have the other side similarly treated. He however failed to turn up until a few days ago, when the present model was obtained. They would see that the gaps had closed up very fairly, and that as a the result of treatment, there was no interstitial decay on that side of the mouth. On the other side, however, where the six-year-old molars were not extracted, the teeth were literally riddled with decay. That seemed to him a case in which benefit accrued through the removal of the six year-old molar. There was no interstitial decay in the mouth on the left side at the time of the extraction, save in the bicuspid.

Mr. David Headridge exhibited the impression of the lower jaw of a gentleman about fifty years old. About nine months ago the latter drew his attention to a little sulcus on the left side of the jaw, from which there was a frequent discharge of pus. He treated the case in the ordinary way. About six months ago he took the impression in question, which showed a well developed crown of an unerupted molar. His (Mr. Headridge's) father had extracted the molars and the bicuspids on the side of the unerupted tooth. He wished if possible to obtain some information as to the best method of treating such a case. The tooth, he might say, was firmly implanted in the jaw.

Mr. Whittaker said he had a similar case about twelve months ago. A gentleman, about sixty-five, who had been wearing artificial teeth for many years, came to him suffering from what he thought was necrosed bone. He (Mr. Whittaker), on probing could feel a tooth, which he presumed to be a wisdom tooth, coming up. He removed some of the gum, and could then see the tooth distinctly. He made the patient comfortable and told him to wait until the tooth showed itself. Whether it had done so or not he did not know, as the gentleman had not come back again.

Mr. Collett said he did not think the late eruption of wisdom teeth was so very rare.

The President said the model seemed to show that the teeth in the mouth were rather crowded, and that, therefore, the wisdom tooth had not had room to erupt itself, but remained embedded in the gum. What were often described as third sets of teeth were only second teeth making a tardy appearance. He thought Mr. D. Headridge had better let nature do her own work. The only thing he could do would be to liberate the tooth as much as possible, and keep the gum from closing over it.

The President then made some remarks in commendation of the method of rotating incisors demonstrated by Mr. Simms at a former meeting.

Mr. G. G. Campion then read a paper entitled "Notes on some of the Specimens in the recent B. D. A. Museum," which we publish on page 251, and which was illustrated by a large number of photographs shown by means of the Optical Lantern.

DISCUSSION.

In opening the discussion, the **PRESIDENT** said he had been very much struck with the photographs showing the nodules on the teeth. He thought such malformations were due to nature having been disturbed in her work.

Mr. **DAVID HEADRIDGE** said the paper was of such scientific interest, and the specimens were so unique, that it would be well if they could be figured either in the Society's *Transactions*, or in some Journal. The formation of the enamel nodule was certainly extraordinary, and so far as he was aware, the subject had not been so conspicuously referred to before. It was rather difficult to see how the nodule could have been left in the position it was, as the teeth would be developed on one plane. The only explanation was that the nodule of enamel was left behind, so to speak, and did not continue to grow with the upward growth of the teeth. It was rather unfortunate that while there were so many exhibits showing irregularities, there were few showing the treatment of such cases.

Mr. **PLANCK** rose to propose a vote of thanks to Mr. Campion, and in doing so, said they were all indebted to Mr. Campion for having done so much to strengthen their Society, both by the papers he had read, and the work he had done on its behalf. (Applause).

Mr. **COLLETT** seconded the proposition, which was carried unanimously.

Mr. **CAMPION**, in reply, said he was very much obliged to them for the way they had passed the vote of thanks. He need scarcely make any reply to the discussion. As Mr. Headridge had said, it was easy to form theories as to how the enamel nodules were formed, the difficulty was to prove them. At present it was utterly unknown. He would like to see a collection made in the Museum at the Dental Hospital of cases of irregularity, and their treatment. Such cases were constantly occurring in their practice. It simply meant that they should contribute notes and models of cases showing the method of treatment, and any improvement which might have taken place. Such a collection would be invaluable for students at the Hospital.

LIVERPOOL DENTAL HOSPITAL, STUDENTS' SOCIETY.

The Annual Meeting in connection with the above Society, was held Friday, January 20th, 1893. R. H. Bates, Esq., in the chair.

The Chairman called upon the Secretary to read the minutes of the previous meeting, which were duly sanctioned.

Mr. Osborn, the Hon. Treasurer, read a most encouraging Annual Report, the principal feature in it being an increase of balance, more than double that of the previous year.

The Secretary then read his Annual Report, it being equally satisfactory. He mentioned that there was a decided increase both in the attendance and interest in the work of the Society ; the papers given would compare with others read at similar Societies, the discussions following them being of a spirited character, and mostly maintained by the students themselves.

The next important business was the re-election of officers for the ensuing session, which was conducted by ballot.

The following gentlemen were elected :—

President,—E. J. Phillips, L.D.S., M.R.C.S.

Vice-Presidents,—W. H. Gilmour, L.D.S., and F. Coysh, L.D.S.

Treasurer,—L. J. Osborn, L.D.S.

Secretary,—F. R. Guyler.

Council,—Messrs. Woods, Byrne, and Shields.

Mr. Bates, the retiring President then delivered his Valedictory Address, which we publish on page 259. Many useful and practical hints were given to the student members, who apparently well appreciated them. A special vote of thanks was presented to Mr. F. Paul, F.R.C.S., for the interest he had shown in the Society by lending microscopical specimens for each meeting, and a vote of thanks was also passed to the retiring officers.

Dental News.

The attention of Mr. Samuel Smith has been called to a regulation attendant upon the Examination of the Civil Service for the Post Office. It appears that candidates having passed the examinations are remitted to the medical officer, who, inter alia, examines their teeth, and sometimes Mr. Smith is assured "orders as many as six or seven to be extracted." This is bad enough even with the situation thrown in. But teeth extraction does not carry with it any guarantee of provision in the Post Office, and a candidate may lose his teeth and not obtain a situation. Mr. Smith has undertaken to bring the grievance under the notice of the Postmaster General.

APPOINTMENT.

W. H. Tregea has been appointed Dental Surgeon to Sir Josiah Mason's Orphange, Erdington, Birmingham.

VACANCY.

The Dental Hospital of London, Leicester Square. The post of Assistant Anæsthetist is vacant. Applications to be made to the Secretary on or before the 20th inst.

ANSWERS TO CORRESPONDENTS.

John Wilson.—We fail to recognise your name in the Dentists' Register, and therefore can scarcely accept your views as representative of those held by the profession.

A Hater of Hypocrisy.—We are unable to identify your name and address in the Register; we agree with much in your letter.

Thomas F. Tracey.—We have sent you a reply by post, as desired.

W. R. Tuck, Truro.—We cannot commit ourselves to a particular issue. Some portions of the paper need careful revision.

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester, during the month of January and February, 1893.

	Jan.	Feb.
Number of Patients attended .	821	1045
Number of Extractions . .	536	658
Number of Extractions under Anæsthetics .	109	158
Gold Stoppings . . .	46	85
Other Stoppings . . .	116	216
Miscellaneous . . .	321	141
Crowns	2	3
Irregularities . . .	28	37
Total . . .	1158	1298

J. C. LINGFORD, *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

   Twelve Months (post free) - - 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office speciaG. E. Skliros, 289 & 291, Regent Street, W. A single number sent on passed tot of seven (penny) stamps.

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EPULIS.*

By C. W. Glassington, M.R.C.S., L.D.S. Edin.

Mr. President and Gentlemen,—The subject of my paper this evening is one which is of great interest to the Dental Surgeon, for although some Practitioners may seldom have a single case come under their notice, others are more fortunate in having several. I do not purpose making this a lecture, but rather an introduction to the subject, with some of my own views thrown in, by way of discussion. I shall give a history (with models) of some of the cases which have passed through my hands, which I trust will be of interest to you.

My paper is divided into three parts, viz. :—

1. The Causes.
2. Signs and Diagnosis.
3. The Treatment of Epulis.

1. *The Causes.* Idiopathic, but more frequently from the irritation of jagged teeth, or stumps, or from wearing artificial plates.

2. *Signs and Diagnosis.* It may be a round or oval swelling, but generally an irregularly shaped growth, some-

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* Read before the Students' Society, National Dental Hospital.

times lobulated, with a broad base, but not unfrequently pedunculated. It is of the same colour as the gum, but if of large size may be red, congested, or ulcerated from irritation of opposing teeth. The most common site is the labial or buccal surface of the teeth (but there are exceptions), and one or two teeth are generally displaced and separated.

The diagnosis as a rule is very simple. It may be mistaken for (*a*) Polypus of the gum. I have frequently heard candidates at the L.D.S. Examination, when they have been shown a model of a characteristic Epulis, say it was one of polypus. These last named growths are merely enlarged portions of gum tissue which grow into the cavity or cavities of decayed teeth. They are not of large size, have frequently an offensive odour, and bleed freely on the slightest touch.

(*b*) Vascular tumours of the gums. These are distinguished from an Epulis by their colour which is deep blue, by the occasional presence of pulsation, their elastic feeling, instead of the firm fibrous feeling of Epulis, by their compressibility, when they become pale and reduced in size, and return to their original shape after removal of the pressure, and by constant hæmorrhage.

(*c*) Epithelioma. When an Epulis has been allowed to grow to a large extent, and has become ulcerated on the surface from irritation of the opposing teeth, and fœtid, it may be mistaken for epithelioma, but the absence of the various signs of the latter disease, such as enlarged glands, the cancerous cachexia, pain, &c., would signify that the growth is not of a malignant character.

(*d*) Chronic Abscess. This is diagnosed, as a rule, by the presence of fluctuation, but at times, as in a case I shall describe to you later on, it is absent, or perhaps in this one individual case I failed to detect it.

(3) *The Treatment*. In touching upon this part of my

subject, I know I shall open up the chief points of discussion. Before doing so, I must ask you to kindly allow me to speak briefly on the pathology of Epulis. According to the greatest authorities Epulis grows from the endosteal membrane, either of the alveolar border, or the septum between. In other cases, when it has its origin or rather *makes its appearance* some distance from the alveolus, Mr. Salter says that the tumour is connected primarily with the periodontal membrane. These facts are, I think, indisputable, and must therefore be taken into consideration when operating on a case.

Surgeons say that the tooth, or teeth, connected with the tumour must be removed, the tumour thoroughly excised, and the bone removed, or well scraped. Dental surgeons on the other hand naturally prefer conservative dentistry, and try if possible to remove the trouble without removing the teeth. Now, although I quite agree with the latter in some few cases of Epulis, yet I am sure, from pathological reasons, their ideas are not practicable in the majority of cases. My reason for saying so, is as follows. It is well known that the majority of these tumours spring from the deeper structures, and are not merely superficial growths of the gum as their name would imply. It is also a fact that if a recurrence takes place, the growth which was formerly of a fibrous nature, is likely to become of a myeloid character; that is to say, there is a degeneration of tissue which may become sarcomatous in its nature, or carcinomatous.

In most of the cases of Epulis which have come under my notice, I adopted the following operation. First, excise the tumour, then remove the two teeth connected with it, and afterwards with an ordinary pair of excising forceps cut away the entire alveolar border, and the septum between. I remove the tumour *before the teeth*, because the latter not only give you something to cut upon, but also if you extract the teeth first there is a lot of hæmorrhage which considerably interferes with the subsequent operation. After the patient has recovered from the effects of the anæsthetic, I usually touch the parts with Chloride of Zinc. The only after treatment is a mouth-wash, of a weak solution of Permanganate of Potash. This, perhaps some of you will say, is very radical treatment, but if you have a case where the tumour is evidently growing from the septum between the two teeth, and where the ordinary removal of the growth and scraping of the surrounding bone, which is advocated by conservative Dental Surgeons, is *uncertain* to effect a cure, then I maintain this radical treatment is the only one that should be adopted. I fail to see how any surgeon can hope to effect a cure by simply excising and scraping the bone, when he knows perfectly that the tumour is growing from a part which is not thoroughly accessible to him, or even if he can get at the root of the growth, is it not likely that he *must* do such injury to the surrounding parts, and teeth, that it will ultimately so affect the latter, (which he has been trying so hard to save), as to cause them to be extracted later on, that is to say if they do not fall out?

On the other hand, take a case like this (model shown.) Here we have a simple form of Epulis—one evidently growing from the outer border of the alveolus. In such a case no one would dream of removing the teeth. All that need be done would be thorough removal of the growth and scraping the bone. But in my experience, these simple cases are very rare, as in the majority of cases which have come under my notice the tumour has sprung from more inaccessible parts of the jaw. I will now give the history of some cases, with the reasons why I adopted the line of treatment in each case.

Case I.—Some ten years ago, I was consulted by a lady about a lump at the back part of the mouth on the left side. The patient had an edentulous upper jaw, and was wearing a

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man, and the tumour was removed with
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he patient made a perfect recovery, and
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represented in vulcanite, which I made
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ccurred in a still younger patient, her age was fourteen. The tumour was evidently growing from between the left lateral incisor and canine. After the experience of the last case, I determined to remove the lateral tooth. This I did, excised the growth, and well scraped the surrounding bone. I saw the patient in two weeks time, and noticing a small granulation by the side of the canine, I cauterized it with chloride of zinc. This had no effect, and finding the growth extending round the canine, I removed it together with the septum and outer alveolar border. The parts rapidly healed and there was no recurrence; this was two years ago, and I lately saw the patient and took a model of the mouth, which I now send round, and made her a denture. This case was one which I am opinion grew from the septum and it is in thes cases that the teeth should be removed and the septum entirely destroyed.

Case 4. This illustrates a case of Epulis growing more from the inner alveolar border than from the usual sidee The patient, a domestic servant, was thirty four years of age. When she first came to me the tumour was growing right inside the mouth and was very firm and hard to the touch. The four incisors were loose and very irregular, and, in addition, both the laterals were very much decayed, and the left canine merely a stump. I extracted all these (except the stump) first of all, and told the patient to come again in a week. At the end of that time the tumour had considerably altered its position, having come to the top of the gum. This you will see by the model I send round, but you will notice there is considerable thickening of the tissues on the inner alveolar border. An appointment was made and Dr. Maughan administered gas and ether. After freely excising the growth I cut away with a pair of lower excising forceps the inner wall of the alveolus up to the canine on the right side. I also extracted the left canine stump, and touched all the parts with chloride of zinc. I have seen the patient occasionally and there is no recurrence. I sent round to her to-day to take a model but she has left her situation. I should like to say that I should not have extracted any teeth in this case, but for the fact that they were unsightly, loose, and decayed. Microscopic examination showed the tumour to be of a purely fibrous character.

Case V.—This illustrates a case of Epulis caused by the irritation of stumps. The patient, a female, single, aged twenty-eight, was sent to me at this Hospital by my friend Dr. Prince, of Harrow Road. The tumour had been growing two years. Here, as in the former case, I first extracted all the roots round about the growth, and sent the patient away for a week and then operated, and freely removed the alveolar process. Three months after removal, I made the patient a partial upper denture, (Models shown). Microscopic examination showed that the growth contained myeloid cells.

Case 6.—The patient, a female, aged about twenty-six, came to this Hospital five months ago. The condition of the mouth is shewn on the model. This was another case where the tumour sprung from the septum and outer alveolar wall. The case is so recent that it would be unfair to give a prognosis.

Case 7. This is interesting from various points of view. The patient, a lady of 45, consulted me some 6 or 7 years ago about a troublesome wisdom tooth on the right side of the lower jaw. On examining the mouth I found a round growth the size of a nut connected with the tooth which I diagnosed as Epulis, and advised its immediate removal. This she refused to have done. I saw no more of the patient for two years, when she came to have the wisdom tooth in question, extracted, as it had become very loose. The tumour was still in the same condition. I extracted the tooth, and again impressed on her the necessity of removing the growth. A few months ago I again saw her, and she then informed me she would not think of any operation as she looked upon the swelling as a "safety valve." She told me that since menstruation has ceased with her, the swelling had varied in its size. That when the ordinary menstrual flow should have taken place, it had increased in size, and after about 3 days had burst, and discharged, and then she had relief from certain pain and discomfort. I think this would come under the heading of "Chronic Abscess," rather than "Epulis," but have brought the case forward to show how a mistaken diagnosis might occur. I might say there was no fluctuation, or anything to show it was an abscess. The model I pass round shows the present condition of the mouth.

Time will not permit me to give you details of further cases. Those I have brought before your notice are, I think, very characteristic of the various forms, and show how different kinds of treatment may be adopted I have not made a pick of all my successful cases, but have brought before you those, which I thought, would be interesting and somewhat out of the common. I have not said anything about the use of Paquelin's Thermo-cautery, Ethylate of Sodium, Electrolysis, or Ligature. As regards the first I think from what I have heard of it that it is a remedy worth trying, still I imagine it must be a very severe one, as much injury to the surrounding tissues must take place, and am of opinion the healing process must be longer.

Of the treatment by Ethylate of Sodium, and Electrolysis, I can say nothing, not having had any experience, but should be pleased to hear any remarks on them. The treatment by Ligature is to be deprecated, as only tending to aggravate the disease.

Before finishing this paper I should like to touch on the subject of anæsthetics in connection with operating for the removal of an Epulis.

Some anæsthetists think the administration of nitrous oxide gas with a little ether, just sufficient to prolong its effect, is enough for such a small operation. I do not. Although it is one which might almost come under the heading "Minor Surgery," still it is an operation which not only requires a certain amount of time to prevent any hurry on the part of the operator, but it is also one during which the patient should remain perfectly quiet.

I do not mean by this that the operation requires the profound anæsthesia which a surgeon must have in those delicate operations on the eye, which necessitate absolute immobility on the part of the patient. In this Hospital, we are handicapped by not having a special room for anæsthetics ; and also no additional room for patients to be placed in, to recover from the effects, consequently, our anæsthetists are placed at a disadvantage in not being able to bring the patient under the full influence of ether. We are, however, looking forward to the time, now close at hand, when we shall be in our new hospital where special provision is made for such cases. As regards Cocaine, well, some of you know I do not believe in it, except for relief of sensitive dentine. To ask any sane man to believe that by injecting this drug into the surrounding tissues and to thoroughly remove an Epulis, previously telling your patient, he or she will not feel any pain, is absurd. The only patients on whom this line of treatment should be adopted, are those who are believers in "healing by faith."

Without advocating any special line of treatment in the ordinary cases of Epulides, I should like to point out the importance of being extra careful, and carrying out the most radical regime, when a case occurs in a middle aged female.

As you know about this time (or later on) when the menses are ceasing, females are more prone to cancer, in fact this is put down as one of the predisposing factors. All the patients I have operated on have been of the female sex, and their ages have varied from 13 to 50.

In conclusion, let me thank you for your kind attention. I have endeavoured to make this paper a practical one, and before the discussion takes place I should like to say, I am not bigotted to any particular line of treatment, and shall listen with pleasure to any remarks or suggestions that are made, and whenever an opportunity occurs shall take advantage of using them for the relief of suffering humanity.

THE DENTAL PROFESSION IN HUNGARY.

By Henry Salamon, Budapest.

The Hungarian Dentists follow the least movement in the profession with interest, and particularly the relations in England seem to us exemplary, because the English professional education unites, in a harmonious manner, both the scientific and practical part of dentistry.

It is the object of this communication to show to the readers of this *Journal* the present state of the dental profession in our country, although I regret that I cannot develope, for the eyes of the most civilised people, an exemplary picture of a dental legislation. But it may be more useful to expose, pitilessly, the wounds of an organism, than to conceal, in false shame, the truth, and thus maintain a state which is injurious both for dental science and dentists.

The fundamental fault of our dental legislation is that the basis is not a rational one. It is not rational because it is not founded on principles, but on trade, which we shall here prove minutely.

There are two classes of persons who at the present time practise dentistry in Hungary.

1st. Doctors of medicine, who having gained the diploma after laborious and hard studies at the University, apply themselves to dental practice.

2nd. Mechanical dentists, who after working several years in a dentist's workshop, become their own master and open a dental office.

The rights of the doctor are not restricted in any manner, of course; he may act without control and operate in the mouths of his patients, although the State does not demand from him any guarantee as to dental science. There are no Dental Colleges like the American or English ones, where the candidate will be taught, not only the science, but the mechanical art as well. For three or four years, indeed, a dental department has been attached to the University at Budapest. The doctors visit it at pleasure during two or three months and gain some vague ideas of extraction, filling, and operative dentistry. Mechanical dentistry will be pursued in quite an accessory manner, and is a secondary occupation of the assistant (doctor of medicine) treated from time to time for some hours.

That is the doctor's preparation for the exigencies of dental practice. Without any special examination, the doctor of medicine becomes in this manner a Dentist.

On the other hand the curriculum of tho mechanical dentist suffers from another important evil. He labours at the side of a skilled mechanic of whom he learns the use of tools, the melting, refining, alloying, and working of metals and alloys used in dentistry, the properties of all substances used in making artificial teeth and dentures, to take an impression and fit dentures into the mouth. But he has neither the occasion nor the right to gain theoretical knowledge, therefore the extraction or filling of teeth is forbidden him.

One may imagine now the disastrous consequences of such a state, and such a division of labour.

On one side a medicine man with a baggage of theoretical science, without practical skill and knowledge, on the other side, a professional man with a large practical mind and view, without the necessary scientific basis.

But just as no amount of scientific acquisitions can compensate for lack of skill in practice, so also in the mechanical art the practical knowledge must be based on scientific principles.

The professional education and the rational dental legislation if they are to be beneficial to the welfare of the nation, must satisfy both demands : scientific basis, and practical skill and mind.

Questioning now, what is the most disastrous fault of our dental legislation ? It would not be difficult to answer : it divides a thing—dentistry—that in its totality is an inseparable one, in two parts. Our present law says to the Doctor of medicine. "You may treat patients suffering with teeth affections," but it does not provide him with sufficient special knowledge. On the other hand it says to the mechanical dentist ; "You may take an impression from the mouth, make artificial teeth and dentures, and fit them into the mouth, but you are forbidden to make an 'operation' (viz. extraction, filling and so forth)."

Is this rational? I think that I need not prove to the readers of this *Journal* the necessity of unity in the dental education and profession. I am willing to cite but one witness, Mr. Harris, in the introduction to "The Theoretical and Practical Treatise on the Dentist's Art."

Such legislation cannot be beneficial, either to patients or to professional men, and in the first place to dental science itself.

What is to be done then? Because this is not a matter which concerns only the public and dentists; this does not affect merely private interests; on the contrary, it is a matter of high importance to the welfare of mankind.

The controversy is easily to be decided, having before our eyes the excellent examples of England, America, and, at last, also that of France (with the law published December 1st, 1892.)

There is to be instituted a Dental College in connection with the University at Budapest, for the purpose of educating men capable to practise the dental profession in its unity and totality, viz:—operative dental surgery, and mechanical dentistry.

The consequence of our present dental legislation and the division of labour is an eternal jealousy, vexation, and quarrel among doctors and dentists.

The Latin says: *Inter duos litigantes tertius gaudet.* There are here two who quarrel with each other, but there is not a third who may be glad. On the contrary, the third —the commonwealth—is suffering.

DENTISTS' ASSISTANTS.

By Cecil Riches, Penarth.

Recent experience has persuaded me that it would be of profit to Dentists and to Assistants, if some suggestions were offered to the latter as to the best method of applying for a situation.

Metropolitan Dentists, and those living in large centres of industry, where many Dental Assistants are located, can scarcely appreciate the difficulties which beset the majority of provincial practitioners in securing the services of a suitable man. In the case of the latter there is no possibility of a personal interview, all information having to be obtained by correspondence, and it will generally be admitted that few dentists are adepts with the pen.

The consequence is that the applications of many men, who may be very competent dentists, are never entertained, solely, perhaps, because they are too vague or too verbose, and do not convey any accurate idea of the professional capabilities of the writer.

Let me illustrate the disadvantage of an application such as it is customary to receive at present. A dentist is pressed with work, wants an assistant, and time is precious. He advertises ; applications come in. In some cases the applicant simply begs to apply for the situation, and asks you to send him particulars. Other correspondents give a whole catalogue of what *they* want ; but not two out of the number will write a note that enables the dentist to estimate their capabilities. Naturally, therefore. the advertiser has either to write twenty or thirty letters of inquiry, or he must select the names of a few and write to them ; and, in the event of the answers not proving satisfactory, he must write to some of the others, who in the interval have perhaps obtained situations. In this way time is lost, and great inconvenience occasioned, simply because there is no systematic method in vogue for the engaging of assistants. It is to suggest a remedy for such a state of things, that I write this to the *British Journal of Dental Science.*

In advertising, it is inconvenient, on account of the tariff, to state very fully what is required, but the same objection does not apply when writing a letter, and no difficulty need be experienced in conveying the most complete and correct estimate of one's abilities as an operator or as a mechanic, if a plan were adopted of filling in a form somewhat like the following :—

GENERAL ENQUIRIES.

References.
Married or Single.
Age.
Height.
Number of years experience.
Where employed.
Where last employed.
Reason of leaving.
What salary required.

SPECIAL ENQUIRIES.

1. *For an Operator.*

How many years' experience.
Experience in filling.
„ Gold Contour.
Simple.
„ Porcelain inlays.
„ Glass fillings.
„ in Crowns.
„ Gold.
„ Logan.
„ Collar.
„ Ferrule.
„ Flange.

2. *For a Mechanic.*

Experience in Bridgework.
„ Double-bar lowers.
„ Tube-work.
„ Gum sections.
„ Continuous gum.

The foregoing might be verified by the late employer.

A photograph should always be enclosed.

If this form is truthfully filled in, it will enable a dentist at once to tell which of the applicants will best suit him. Moreover, all the applicants will have the same chance, time will be saved, and there will be no more cases of young people being landed at great distances from home, after a month's trial, with very little money to take them back again.

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LOW, M.R.C.S., L.R.C.P.

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ANÆSTHETICS.*

By Percy Edgelow, M.R.C.S., L.R.C.P.

Lecture IV.

Hitherto we have considered the simple administration of Nitrous Oxide. Cases often occur in which it is necessary to have a longer period of unconsciousness than it is possible to obtain by a single administration of gas. Several teeth may require extraction, or you may desire to prepare several roots for pivoting, involving removal of the crowns, destruction of the nerves, and drilling of the canals. Again, it may be merely one difficult tooth which you have endeavoured to remove under an ordinary nitrous oxide narcosis and have been unable to do so during the available period of anæsthesia. Lastly, you may know from former experience that the case is one in which nitrous oxide alone seems powerless to induce a satisfactory sleep. These are cases for the employment of other measures.

There are different methods for obtaining the desired result. You may give more gas, either during the recovery from anæsthesia, or after an interval of a minute or two, the patient being allowed to resume consciousness. A mixture of gas and oxygen may be used, repeating the dose in the same manner if necessary. A breath or two of air during the administration of gas may be given, reapplying the facepiece on signs of returning consciousness. Finally, the services of another anæsthetic may be enlisted, e.g., ether or chloroform.

Let us consider the case of a patient, an adult male, from whom you wish to remove three molars, two lower ones on opposite sides and one upper one.

The anæsthetist has to consider how he may best ensure an immunity from pain, with the surest chance of a rapid and complete recovery from the effects of the anæsthetic. In the majority of such cases a most efficient narcosis can be reckoned on by applying the facepiece, and giving more gas, when the patient shows signs of returning consciousness before the completion of the operation. You have been able to remove the two molars on the one side during the primary anæsthesia. Bleeding, perhaps, is free, or pus is discharging, and it is necessary to prevent the blood and matter from collecting in the pharynx, and being swallowed or drawn into the larynx. Here the woolholder is of great service. You insert this over the seat of the operation, the wool effectually absorbing and retaining the discharge. The facepiece is then reapplied and unconsciousness reinduced, and you are able to extract the third molar during the secondary anæsthesia.

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* Abstracts of Lectures delivered at the National Dental Hospital, during the Winter Session, 1892-1893.

Instead of an ordinary healthy adult male, suppose your patient to be an anæmic and weakly female. The prospect of a satisfactory anæsthesia from gas alone is not great. Such a person almost invariably 'goes under' quickly, and if the gas is pushed, jactitations become inconveniently pronounced, and the recovery is unusually rapid. This is an instance of the value of allowing a breath of air on one, two, or even three occasions during the administration. It is a point of great importance when you admit the air. If too soon, you are liable to induce excitement or an inefficient anæsthesia. Your object is to supply just enough air at the right moment to allow a continuance of breathing for the purpose of forcing in a sufficient amount of gas to create a lengthened narcosis.

With the facepieco accurately fitting the face, turn off the the gas during an expiration, at the first intimation of stertor, and allow one breath of air, turning on the gas during the succeeding expiration. Any jactitations that were threatening rapidly subside and the breathing becomes more regular. Continue the inhalation of gas until stertor reappears or spasms are recommencing. Then allow one more breath of air as before. This manœuvre can be repeated two or three times when you finally push the gas to the point of pronounced stertor and respiratory embarassment. This anæmic girl, who is greatly susceptible to the action of gas alone, and with whom you would expect a very limited period of unconsciousness, behaves very differently under the influence of nitrous oxide in combination with these breaths of air. The body generally is quieter ; lividity is less pronounced, and the period of insensibility is much increased, often to double the usual extent

In children, this practice of admitting air is attended with the happiest results. Spasms are either absent or greatly diminished and anæsthesia is prolonged.

Men, as a rule, do not bear this admission of air satisfactorily, unconsciousness being of shorter duration. They apparently require a full and continuous dose of gas to be repeated, if necessary, as before mentioned. Phonation is somewhat more liable to occur than with gas alone. The tongue and tissues about its base show a tendency to swell in a more marked manner. This is probably due to the increased amount of nitrous oxide forced into the system. Apart from these slight drawbacks, the practice of permitting breaths of air in suitable cases is a valuable one.

Paul Bert, recognising the great value of N_2O as an anæsthetic, succeeded in establishing a good and lengthened insensibility by administering it in conjunction with oxygen in a large chamber specially constructed, the atmospheric pressure inside which was doubled. By this means he was enabled to force into the patient a sufficient quantity of N_2O to produce a most satisfactory and tranquil anæsthesia and to keep it up for several minutes. The costliness of the whole apparatus doomed the method to practical extinction. Within the last three or four years, Hewitt has carefully investigated the administration of the two gases under ordinary atmospheric conditions. His published record of a large number of cases shows that an additional fifteen to twenty seconds of unconsciousness is often available in suitable cases. He recommends the mixture in the following instances, as preferable to nitrous oxide.

1. In children.
2. In anæmic and debilitated patients.
3. In anyone who has previously exhibited great susceptibility to nitrous oxide and has remained a very short time under the influence of the gas.
4. In patients who, under nitrous oxide itself, have experienced unpleasant sensations.
5. In patients very advanced in years and in those suffering from such serious visceral disease that ordinary nitrous oxide seems inadvisable.

He claims for the mixture the following advantages;

A longer period of unconsciousness, absence of stertor, jactitation and lividity. A less swollen state of the tongue and adjacent parts.

There are, however, some not inconsiderable disadvantages present:—

1st. The complexity and extra bulk of apparatus.

2nd. The multiplication of attention to detail.

3rd. The increased length of time necessary to produce anæsthesia.

4th. The liability to after effects.

Examining these points more closely, I will first draw your attention to the apparatus.

(Here Hewitt's apparatus was shewn and explained.)

The second disadvantage is the necessity for the very careful regulation of its administration, and the accurate proportional adjustment of the gases. With too much oxygen, the desired effect is not obtained, but excitement, struggling, laughter, and screaming are liable to occur. Too much nitrous oxide, and an ordinary nitrous oxide narcosis results. There is no fixed percentage, but the administration must be entirely guided by a constantly correct interpretation of phenomena exhibited by the patient. The proportion desirable appears to be 10 per cent. or under, of oxygen.

Again, the average period of inhalation is 110·5 seconds. To patients accustomed to go off in not much more than half the time, the increased length adds undoubtedly to the mental disquietude so often present. You may say that the method of giving a breath or two of air involves a longer period of inhalation than occurs with gas alone. True, but your patient is not conscious of it, as you do not admit the air until all consciousness is in abeyance, as indicated by the breathing, and onset of jactitations.

With the mixture of oxygen and nitrous oxide, the period of consciousness preceding anæsthesia is undoubtedly lengthened.

Lastly, the after effects are more pronounced. A feeling of drowsiness and desire to remain still is manifest. Nausea, retching, and vomiting are more liable to occur than with N_2O alone.

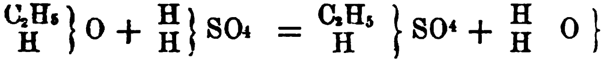
Thus, although this mixture gives an advantage in point of time to the operator, and is on that account of much service in cases demanding an increased duration of insensibility, as well as in such cases as Hewitt has specially designated, yet in the ordinary run of patients, nitrous oxide has such undoubted advantages over the mixture, that there is little likelihood of the latter displacing the pure gas. And I may add that the results Hewitt claims for the combination are to be readily obtained by the method of giving a whiff or two of air with the ordinary apparatus.

We now pass on to the study of the other anæsthetic agents in use.

Ether is a clear colourless liquid with a specific gravity of ·720 at 68°F. It boils at 95°F. and its vapour has a specific gravity of 2·565. It is very inflammable, highly volatile, and emits a strong pungent odour. When pure, its reaction is neutral. It is soluble in alcohol and in nine parts by measure of water.

It is prepared by the action of concentrated sulphuric acid on strong alcohol and heating the mixture to 140°C.

The following double decomposition takes place.



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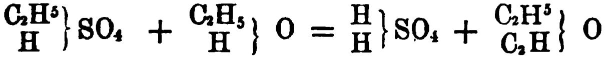
Alcohol. Sulphuric Acid. Ethyl Sulphuric Acid. Water.



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Ethyl Sulphuric Acid. Alcohol. Sulphuric Acid. Ether.

Thus the original quantity of Sulphuric Acid is capable of being utilized over and over again, a fresh supply of alcohol only, being required. It should always be kept in a cool place and in a well stoppered bottle, otherwise it may undergo decomposition, acetic acid developing. Alcohol, Sulphuric Acid, and water are impurities that may be present and should be tested for, in any doubtful solution.

Generally stated, ether is a stimulant, and if inhaled with air, produces an exhilarating sensation with buzzing in the ears. Persons will shout, sing, or laugh. If breathed in a pure state, without air, its vapour produces a burning and choking feeling, with a strong sense of suffocation. If the inhalation be continued, a stage of semi-consciousness with some occasional struggling, is passed through, and incoherent muttering, with efforts to remove the inhaler are apparent. The pulse is quicker, and respiration which had a tendency to be restrained is becoming hurried. This condition passes into the unconscious, or narcotic, stage. The muscles are more or less rigid. The general appearance of the skin varies. Usually of a well marked reddish tinge, at times lividity is present, this being, as a rule, connected with some difficulty of breathing. An activity of the sweat glands is manifest. As the administration is proceeded with, a general flaccidity of the limbs supervenes, the breathing becomes stertorous, and corneal reflexes are abolished ; the pupils are usually contracted, but may be moderately dilated. This is the desired anæsthetic condition. The salivary glands and mucous membrane of the mouth and air passages are actively secreting.

There are a number of different inhalers in use, many of which you see here. I prefer Clover's portable apparatus to any other. Ether may be administered by itself or in conjunction with gas. Both as regards the feelings of the patient and the rapidity with which anæsthesia is induced, the method of giving it in connection with gas is immeasurably superior to the practice of giving it alone. With gas also you may adopt one of two ways.

You may place your patient under its effects to complete unconsciousness, and then apply the ether in a separate inhaler, or the gas and ether apparatus may be connected, as you see here. There are many objections to the latter arrangement, and I find in practice that everything is in favour of keeping the two separate. The mode of its administration you observed in the case of the patient operated on for a very difficult extraction at the commencement of the lecture. Having placed her well under the influence of nitrous oxide gas, I applied Clover's inhaler during an expiration, and you noticed a momentary cessation of breathing just after the change was effected. This was due to the impingement of the ether vapour on the larynx causing a spasm of the glottis. The respiration soon however occurred with regularity, as I allowed only a small quantity of the vapour to be inhaled turning on a larger dose as the air passage tolerated it. Horsley has shown that the adductors are in action during slight ether narcosis whilst the action of the abductors predominate during deep anæsthesia.

With the indicator standing between 0 and 1, on the ether chamber, I gradually moved it to 2 and kept it there until the patient was ready for operation and you will find it rarely necessary to turn on more ether than to this amount, viz., two fifths. The availabie period of unconsciousness thus established is as a rule sufficient for several extractions. But you observed the difficulty the operator experienced in making the slightest impression on the tooth, and how it was necessary to repeat the ether three times before the extraction was finally accomplished. The woolholder was of much service during each inhalation, in absorbing the blood and presenting a clean surface for the operator to proceed with.

A person may in this way be kept under its effect for half an hour or an hour, permitting practically the fullest operative procedure required in dentistry.

Such after effects as dizziness, nausea, retching and vomiting are more pronounced with ether than when nitrous oxide is used alone, and they will bear, as a rule, some relation in severity to the duration of the anæsthesia. With ether, also, it is of more importance to abstain from food for at least four hours before the administration. There are certain cases in which it is inadvisable to use ether, e.g., in such chest affections as bronchitis and emphysema of the lungs, in inflammatory affections of the wind pipe or narrowing of its calibre from growths within, or pressure without; in advanced renal disease; persons with brittle vessels; and in infants or very young children, their delicate mucous membrane being susceptible of great irritation from the fumes of ether. The dangers connected with the use of ether are referable mainly to the respiratory system; spasm of the glottis, bronchitis pneumonia, or actual paralysis of the respiratory centre in the medulla.

Syncope may occur, but it is rare. Should respiration cease, means to restore it must be immediately resorted to. Pulling the tongue forwards and sweeping the finger round its root to make sure of no foreign obstruction will often suffice to start the breathing. If not, pressure of the lower jaw forwards, from its angle, with elevation of the chin and extension of the head backwards will often prove effectual.

Should these means fail, artificial respiration must be done immediately and preferably with inversion of the body. If a galvanic battery be at hand adopt Herapath's method of applying the positive pole to the nostril and the negative pole over the diaphragm. Reflex action may be thus excited between the fifth nerve and the pneumogastric.

Alcoholic stimulants should, as a rule, be avoided, the symptoms of ether poisoning and alcoholism being similar, viz., lowering of pulse rate and temperature, cold and clammy skin, embarassed respiration, increased pulmonary secretion, and œdema.

We understand that the Students' Society in connection with the London Dental Hospital, are making arrangements to give a concert in aid of the Building Fund of the New Hospital, in Leicester Square.

A Dentists' Act for New South Wales.—We regret to learn that, in consequence of the unsettled state of politics at present existing in the Colony, the Bill has not yet passed through Parliament.

British Journal of Dental Science.

LONDON, APRIL 1st, 1893.

TECHNICAL TRAINING IN DENTAL MECHANICS.

The interesting communication, which we publish elsewhere, as to the condition of Dental practice in Hungary, contains, besides a flattering reference to English professional education, a statement which appears to require some explanation or modification. The author regrets that in Hungary there are no Dental Colleges like the English ones where the mechanical art is taught, and he apparently overlooks the fact that the mechanical training in this country has been carried on in much the same manner as in his own, and that the reputation gained by English practitioners for excellence in mechanical work has been the result of private teaching as opposed to organised class instruction. There are not wanting signs to show that a leakage in the mechanical capabilities of our present day practitioners may be expected; indeed many openly lament that it is already impossible to find assistants who are able and willing to take their share of bench-work. It would seem as if there were some reason for the complaint, sometimes made, that in proportion as the surgical aspect of dental practice has received more detailed attention as part of the curriculum, so the mechanical portion of the student's training has been neglected, with the result that the proud position so long held by the Britisher appears in danger of being relinquished.

At present the licensing authorities require from a candidate a certificate of three years' pupilage to a dental practitioner; and provided the latter is capable, and honourable to the trust he has undertaken the result need not be so very disastrous. Unfortunately, the said certificate does not go into details, and there is the risk that it may regarded as more or less a matter of form. It is true that when the after coming examination demands a practical acquaintance with mechanical work, the serious student will recognize that he must come prepared, and parents and guardians when making the necessary arrangements for apprenticeship will probably become stricter in their enquiries.

There are, however, observers who consider the time has arrived when the mechanical training should have even an increased attention, or at all events that an alternate system should be allowed a trial. The Edinburgh Dental Hospital, we believe, makes arrangement for the reception of pupils who wish, in such a manner, to learn the mechanical part of their work, and we imagine that the Dean in his official capacity, signs the necessary certificate as a dental practitioner. The Dental Hospital of London has for some time past afforded opportunities for Students, fulfilling the hospital part of the curriculum, to make themselves practically acquainted with the preparation and insertion of dentures and regulation plates, in connection with the charitable work of the Institution ; but, if we recollect aright, it was expressly stated, when this was a new departure, that the undertaking of mechanical pupilage was not contemplated. With two new hospital buildings, perhaps both the London Dental, and the National Dental Schools may find it necessary to consider the position, and Guy's may also follow suit, especially if by any chance the licensing bodies institute a change in the certificates required.

Meanwhile, a scheme for a proposed School of Dental Technology has received considerable attention. It is suggested that an Institution for manual training and instruction in those branches of art and science bearing on mechanical dentistry, should be founded, in order to afford an optional alternative, supplementary to the present system of private pupilage or apprenticeship. It is hoped that by following on the lines adopted by well-known Technical Schools, a specialised curriculum in mechanical dentistry will produce equally satisfactory results. Apart from the reception of pupils on their way to the dental diploma, it is proposed to afford facilities for training those who wish to act as dental mechanics to practitioners, and, still further, it is thought that practitioners themselves might sometimes like to take the opportunity of getting supplemental instruction in some special parts of mechanical dentistry.

Such a scheme must, no doubt, present points open to criticism, but, leaving financial and some other matters on one side, we may say that the proposed curriculum which we have seen in print, has obviously been carefully thought out. It bears every indication that those responsible for it have honestly endeavoured to meet what, in the opinion of very many practitioners, appears to be urgently required, viz :—a method of maintaining, or even improving, the teaching of dental mechanics in Great Britain.

THE DENTISTS' REGISTER.—*The Register* for 1893 is now on sale by the Council's Publishers, (Messrs. Spottiswood & Co., 54, Gracechurch Street, E.C.) Advantage has been taken of the issue by the Council of a Resolution in regard to "covering" to send all registered dentists an inquiry form to ensure the correctness of their addresses and qualifications, and as a result of this inquiry, the information is more than usually accurate.

The total number of names now appearing in this Register is 4817 as against 4896 in the Register for 1892, being a decrease of 79, probably due to the thoroughness of the revision. Of the 4817 Registered Dentists, an increasing proportion are Licentiates in Dental Surgery of the several Colleges; the percentage of such dentists being now 25.43 as against 24·07 last year, showing a marked increase from the 10·74 in the Register for 1881. On the other hand, the percentage of Dentists whose names appear with no such qualification has further decreased from 75 in 1892 to 73·49 in 1893, a marked diminution from the 89·26 of 1881.

The *Medical Students' Register* shows a decided decrease in the number of those who are entering the profession, 734 less students registering in 1892 than in 1891, the total number being 1671, which is lower than for any year since 1876. Complete information is furnished as to the various Examinations of the Preliminary Examining Bodies on which the Students registered, and the various Medical Schools at which they commenced their professional study.

REPORTED DEATH OF A DENTIST FROM NITROUS OXIDE —The newspaper accounts of an inquest recently held, do not give a very clear idea of the sad circumstances under which a London dentist lost his life. From a personal enquiry into the matter, there seems little reason to doubt that the cause of death was ordinary asphyxia, rather than respiratory paralysis from nitrous oxide. There were three 100-gallon cylinders in the room. Two were in a vertical stand in a corner. One of these was full, and turned off. The other was turned on, with the key in position, and was empty. The third was a new arrival, lying on the floor close by, wrapped in brown paper. From a comparison of cases recorded in business books, it is possible that the cylinder in use might have been half full, but a suggestion is possible that it was nearly empty, and that the new cylinder was to take its place in the stand. The deceased was found, by a servant, in a bent position in the corner of the room. The face-piece was near the mouth, whether held by the hand, or supported upon the knees, is not certain. The left hand seems to have rested upon the gas stand, and in this way a bruise upon the anterior surface of the wrist may be accounted for. The body was warm, there was marked cyanosis, but no pulse, and artificial respiration was of no avail. A post-mortem examination showed slight hypertrophy of the left ventricle, an engorged right heart, and the venous system everywhere much congested. The lungs were also extremely congested, but there was no foreign body in the air passages. It is difficult to imagine that anyone could sit upright in a chair and inhale gas from a face-piece held in the hand until the respiratory centre was paralysed. The inference is that the deceased intended changing the bottles in the stand, and took the idea of inhaling the small quantity which he supposed was left in the old bottle. It was enough to cause loss of consciousness ; and slipping from the chair resulted in a position which prevented respiration. We found, as details, that the two-way stop-cock was hard to turn, and that there was a leak in the two-gallon bag used. We think the jury fully justified in returning a verdict of "Death from misadventure."

THE CHICAGO DENTAL CONGRESS.—It has been found necessary to change the time of meeting, and the order of business has been also re-arranged. More than a hundred congresses had to be provided for, and now there will be two large audience rooms capable of accommodating three thousand persons each, and more than twenty smaller halls which will seat from three hundred to seven hundred persons each. Other congresses to be held at the same time as the dental one, will be in connection with Pharmacy, Medical Jurisprudence, and Horticulture. The time, as now fixed, is from Monday, August 14th to Saturday August 19th inclusive.

AMERICAN DENTAL ASSOCIATION.—The section of Dental Education and Literature has reported five additions to the list of colleges granting diplomas, namely: Dental Department of the Tennessee Medical College, at Knoxville ; Chicago Tooth-Saving College, at Chicago ; Dental Departments of the Homœpathic Hospital College and of the

Western Reserve University at Cleveland, O; and Dental Department of the University of Buffalo,—making a total of thirty-eight. The number of graduates has risen from 503 in 1886 to 1483 in 1892, the average in seven years being 904. Of the graduates this year, ten institutions passed more than one-half,—namely, 851,—while fourteen others contributed 91. The three years' course does not seem to have had the ill effects predicted at the time the addition of one year to the curriculum was requested by this association. On the contrary, the class of students entering the colleges is superior, and they fully appreciate the advantages gained. It will not be long before they will be placed at four years of nine months each.

SOLID AIR.—Professor Dewar tells the Royal Society that he thinks he has succeeded in freezing air into a solid mass. Oxygen alone, has resisted all his efforts, for the cold produced by its own evaporation under the air-pump is not enough to freeze it, as in the case of other gases. Nitrogen can be frozen with comparative ease. The question then arises what is the solid which Professor Dewar now shows. It is clear and transparent, and may perhaps be a jelly of solid nitrogen containing liquid oxygen, or on the other hand it may be a true ice of liquid air in which both the oxygen and nitrogen assume a solid form.

PTOMAINES.—*The British Medical Journal* points out that the letters and articles written in connection with the recent sardine poisoning case, show there is much misconception on the subject of ptomaines. Thus boiling and cooking food does not destroy the virulence, as it might do in the case of bacteria, for all the ptomaines are resistant to the action of heat. Neither will boiling dissolve out ptomaines from the centre of a piece of meat, although most of them are soluble in water. Again, when several people have partaken of a tainted article of food, and only one has been poisoned it cannot be argued that his illness is not due to the toxic nature of the food, for the poison may be extremely localised, or, as in the case of sardines, may be present only in one fish.

Post Office Candidates and the Teeth.—In the House of Commons, Mr. S. Smith asked the Postmaster General whether it was a compulsory rule that candidates for situations, after passing the Civil Service examinations, had to comply with the order of the medical officer to have such teeth extracted as he might require, sometimes as many as six or seven, without any guarantee that they would be then accepted, and whether without the extraction of such teeth they were rejected. Mr. A. Morley said the Medical officers were instructed to report officially with regard to the sight, the hearing, and the teeth of candidates for appointment; the state of the teeth being regarded as an indication of the state of the health. If they were out of order, the medical officer withheld his certificate, but he did not decide what operation, if any, was necessary. The candidate was informed he must see a properly qualified dentist, and the selection of the dentist was left to the candidate himself.

Artificial Teeth as Aids to Beauty—Some of the readers of a woman's Journal have been expressing themselves, by invitation, upon the justifiability of women resorting to artificial aids in order to preserve a good appearance. Artificial teeth come in for some notice, in their action as 'plumpers,' to the cheeks; one correspondent certainly alluded to their affect upon the health. But we should have liked one and all of these ladies to have recognised distinctly the mode by which artificial dentures would tend to improve their appearance, although only indirectly. A little knowledge of physiology would indicate the importance of proper mastication, good digestion, and easy assimulation, in the production of naturally rosy cheeks.

Review.

How to give Gas. With a detailed description of the apparatus employed. Illustrated. By T. E. Constant, M.R.C.S., L.R.C.P., L.D.S. London: J. P. Segg & Co., 289 & 291, Regent Street, W.

Our readers have already had the opportunity of perusing Mr. Constant's work which first appeared as a series of papers in the *Journal*. As now published, it affords an excellent little guide to the administration of Nitrous Oxide. Whilst all will rejoice at the strides made in conservative dentistry, and the avoidance of extraction where possible, we have not yet reached the point when the forceps may be entirely laid aside. There are also other operations which render it necessary that the progressive and humane dentist should take care to keep himself well posted in everything connected with the subject of anæsthesia. Mr. Constant's book is written from the practical aspect, and therefore does not deal with the physiological and strictly scientific questions to be found in larger works. The style is clear and concise, and the instructions given are easy to follow. Upon the vexed question as to who may be considered qualified to administer gas, the author is of opinion that no one should undertake this responsibility, in operations in the mouth, unless fully prepared to perform laryngotomy or tracheotomy, in event of either becoming necessary. In endeavouring to find points for criticism, we should perhaps have preferred a protest against undue extension of the head when operating in the upper jaw, but the author illustrates, and recommends the oral net-spoon. Some administrators may think, and we are inclined to agree, that undue stress is laid upon the danger of re-administration, though we are aware the author has other good authorities on his side. We can, however, cordially recommend the book to all those interested in the subject of Nitrous Oxide administration.

Abstracts of British & Foreign Journals.

FURTHER CONSIDERATIONS ON THE SUBJECT OF DENTITION.

By C. N. Peirce, D.D.S.

In the diseases of infancy and childhood, when severe and protracted, how unmistakably does the influence of disturbed nutrition, through imperfect calcification, draw its unfailing lines across the labial or buccal surfaces of the incisors, cuspids bicuspids, or molars, the teeth so affected varying with the age at the time of the health-disturbance.

The genius presiding over the function of nutrition writes in such indelible characters that one who is at all familiar with the periods of calcification or progressive solidification of tooth-tissues, can with accuracy give the date of the beginning and the ending of the systemic derangement. The histologist, microscopist, and biologist, all unite in establishing the data of tooth development, and give us the seventh week of intra uterine life, when the embryo is but little over an inch in length, as the time for the development of the enamel germ or matrix, to be followed in the ninth week by the dentine germ, these from that date progressing in their developmént until the seventeenth week, when the incisors and cuspids on the zonal or border line between these two germs receive depositions of the salts of lime. The odontoblasts on the upper border of the dentine germ are converted into dentine, while the lower ends of the enamel-cells or ameloblasts, are converted into enamel. By the end of the nineteenth week the same developmental processes have reached the molars, and from this period until the fortieth week, or birth, the integration and calcification of these deciduous tooth germs progress simultaneously, so that at this period (birth) the eight incisors have their crowns quite complete, while the four cuspids and four first molars are fully one-half formed, and the four second molars about one-fourth or one-third calcified. Now, let us suppose that during the period of gestation the mother has been in a retrograde condition, so far as health is concerned, suffering, if you please, with phthisis, or any other constitutional condition interfering seriously with nutrition ; what chance have these erupting, deciduous teeth for permanency or durability? Let us examine the child with such parentage at thirty months of age; what do we find? twenty teeth in position, with rarely more than two, and probably not any, well covered with enamel. If they are not defective on the cutting edges and masticating surfaces, the vertical surfaces will be pitted and broken, uncalcified or imperfectly calcified enamel cells, predisposing the teeth to dental decay and resulting in premature loss. And this from improper nutrition during embryonic life.

Let us now follow the life of the child with the influence of its health on the development of the permanent teeth. As early as the sixteenth week of intra-uterine life we have originating the enamel-germ of the first four permanent molars and the twenty permanent teeth which are to succeed the twenty deciduous. These enamel-germs are quickly followed by preparation for the dentine-germs. Progressive developmental stages in all of these prepare them for the commencement of calcification by birth or shortly thereafter. By the end of the first year calcification has commenced and progressed to a greater or less extent in the four first molars and the four central incisors. During this period, and before it is sixteen months old, but beyond the eighth month, the child is suffering from what may very appropriately be termed interrupted dentition, to the extent of convulsions at intervals of days, or it may be weeks, but continuing in this enfeebled condition for four months or longer. What will be the condition of these eight permanent teeth when erupted? As they make their appearance through the gum, the horizontal or masticating surfaces of the molars and the cutting edges of the incisors will be imperfect in their enamel covering. Let us now suppose that tooth-development has progressed uninterruptedly until the child is five or five and a half years old, and it then becomes ill with scarlet fever, diphtheria, or other serious disturbance,—by this time the second permanent molar has progressed from the period of its origin, three months after birth, until calcification has commenced at five years on its masticating surface,—where now does malnutrition write its history? On the crowns of the five anterior teeth, near the gum-line, or neck, and the masticating surfaces of the second permanent molars. If the systemic disturbance occurs still later in life, between the ages of eight years and twelve, then the crowns of the third molars, or wisdom-teeth, will in

the result of malnutrition. Such is the
sturbances—improper or defective nutri-
oping teeth.

sponsive to the extent we have shown to
s, it demonstrates most certainly a very
vith, and dependence upon, a normal
ystem. This relationship once established,
o assume that they, with their close con-
ninal branches of the sensory, as well as
of the great hypersensitive trigeminus,
vith their manifold functions. The great
erference on behalf of tooth eruption is
physiological process." Undoubtedly it
than hundreds of other processes. Yet
alist, aurist, ophthalmologist, obstetrician,
n what should be a normal physiological

ts we have to deal, and they are so
uthenticated that it ought to be super-
em, and it certainly would be if medical
ers would thoroughly inform themselves
or conditions which may induce these
ervous disturbances which interfere with
s, near or remote. While it should not
r all abnormities or pathological compli-
cy, childhood, or youth are liable, yet,
bilities, it is unsafe to ignore it while
permanent tooth-development is in

tition depends upon a complete corres-
ne development of tooth-germ and its
e, or growing extremity, and the absorp-
noval of the overlying structures, so that,
are solidified, the previously-formed and
h will be lifted from its base, and thus
upon the uncalcified germ or dentine
ckward pressure upon the uncalcified
constitutional disturbance. When this
should be thoroughly used, that for the
o the advancing crown may be entirely

der the observation and treatment of the
Infants who for forty-eight hours or
had quiet sleep or retained food, have,

on liberating the advancing tooth with the lancet, gone at once to sleep and remained for six or eight hours, with abatement of all unfavourable symptoms. Also those suffering from catarrh, with threatened pneumonia, have, with a similar operation, been entirely relieved. Boys of fourteen years of age affected by persistent gum over second permanent molar, and suffering from retention of deciduous molars, may be relieved by lancing the gum in the one case and removing the deciduous molars in the other. Also severe facial neuralgia from impacted cuspids and third molars has time and again been relieved by the removal of the offending tooth.

International Dental Journal.

ELECTRICITY IN ROOT-FILLING.

By Carl Theodor Gramm, M.D., Keokuk, Iowa.

The operator is to consider the root ready for filling, to have rubber-dam in position, and the canal wiped as dry as possible. A "copper canal-point," just fine enough to easily fit the canal, and long enough to allow one end to remain directly visible, is inserted. By means of a storage battery (thirty-five ampere capacity) an electrode is brought to a bright red or white heat and held in contact with the protruding copper point. If there be much moisture in the canal, a hissing sound is heard almost instantly. Contact may be maintained until slight pain ensues, and if necessary, renewed until perfect drying of the root-canal is attained. The point may then be removed, and after the canal has been moistened with oil of eucalyptus, again inserted. Exception to removal of the point is found whenever the canal or canals, as in the molar group, are exceedingly narrow; in these instances it will quite suffice to drench the floor of the pulp-chamber, leaving the cone in position. The medicament will readily follow the point, and indeed move beyond it, owing to capillary attraction. The heated electrode is again applied with a view to increased germicidal energy, and to greater penetration of the heated oil and its pungent vapour into the remotest recesses, into possible pulp-remains, and partly into the tubules of the dentine. A sufficient quantity of base-plate wax is then packed into the pulp-chamber, and for the third time the heated electrode is applied. Almost instantly the melted wax will follow the course of the point to its remotest end, and attracted by the oiled walls will penetrate every crevice presented. Any shred of pulp or foreign matter left within the canal, having been first dried, then rendered aseptic, will now be permeated and imbedded by this filling-material, thus preventing decomposition thereafter. The point is to be left in position, cut short, or bent over, and a layer of cement placed upon it; this latter is an unnecessary addition if the crown cavity is to be filled with amalgam.

The argument in favour of the various factors entering into this operation may be summarized as follows :-

Copper canal-points find their value in (1) ready conduction of heat, and thereby thorough desiccation of the canal; (2) their various sizes, the most attenuated corresponding to the finest hair-bristles; (3) being cone-shaped and thus adapted to the walls of the canals ; (4) being readily inserted and removed in even remote positions.

Eucalyptus oil is commendable because of its wonderful germicidal, stimulating, and healing properties, and its affinity for the filling-material, securing better adhesion to the walls of the canal and increasing capillary movement of the wax globules.

Wax as a filling-material is valuable in being impervious to moisture, inert, and not subject to decomposition nor absorption.

Heat as applied, favours dessication of canal and contents ; destruction of pathogenic organisms ; increasing the penetration and antiseptic energy of eucalyptus by giving rise to pungent, antiseptic vapours ; it also favours melting the wax, causing it to spread throughout the canal.

Lastly, a word as so the storage-cell or battery, the value of which in dental practice has been too long overlooked. The use of this battery in furnishing power for small motors and light for examination of nasal, oral, pharyngeal cavities, and the teeth, in furnishing abundant heat in desensitizing dentine, in drying and sterilizing a root-canal, in removing painlessly and without hemorrhage epulic and polypoid growths, in cauterizing indolent, ulcerated mucous tissue, makes a storage battery, be it only a small one, an invaluable adjunct to the operating-room. The use of electricity need not be confined to the operator having access to a light or power system. The simple and inexpensive manner in which such a battery may be charged and kept charged, makes it a practical instrument to the dentist in a small hamlet. The electrical spirit pervading and making itself useful in many arts and sciences should receive a warmer welcome at the hand of the dental practitioner than it has been granted. When studied and cultivated it will extend its helping hand in many instances to lessen the weariness of the dentist's labour, and, as in root-filling, to improve greatly the services he renders.

The Dental Cosmos.

A FEW FINE DEVICES.

By D. W. Barker, D.D.S.

First.—My pet idea is the cork sandpaper cones; they are of various sizes with a hole in the centre for the screw of the lathe. In my hands they have taken the place of the scraper and file in finishing up rubber plates. It is an actual fact that I have not filed or scraped a plate in months; these cones do the work much more rapidly than the file or scraper can do it, and it is done better, there being no gutters or uneven places. As an adjunct, merely to sandpaper a plate after scraping and filing, if one chooses to do that way, they are a great help, saving much time, and presenting a better surface for polishing. The extra strips should be started in the slit, and a little practice will enable one to wind the paper smoothly on the cork. If the strip is too long, the ring will join before it gets to the butt of the cork, and if it is too short it will be too loose. These extra strips are made of ruby paper, a very sharp rapid-cutting paper. It also is excellent for making discs from.

Secondly.—The strip of German silver plate: To one who has been educated in orthodox fashion, and has been accustomed to use nothing in the mouth but gold or platinum plate, it is a surprise how much German silver can be used,

per way, and effect a saving of that
tly metals. A few of such uses may be
For attaching gold clasps to rubber
German silver lugs, loops, or bars
for attaching plate teeth to rubber
means of German silver plate soldered to
. As backing for plate teeth in ordinary
rman silver should be entirely covered
solder. In making regulating devices,
reat variety of ways for bands, bars,

rman silver wire : It has uses similar
engthening rubber dentures, to prevent
gh the centre. In regulating devices it
r piano wire that it can be soldered to
xcellent for pins, for crowns and bridge
plate is the finest quality made. It is
ver. It can be soldered with 18c. or
, borax or Parr's flux. No care is
s it is almost impossible to *burn* it under
never succeeded in doing so, and I
es with a powerful blow pipe). Rubber
solidly in contact with it (which it does
ith some metals). It is inexpensive.
ling to sell it at $1.00 an ounce, it is
ts a pound. I should add that after
n silver cleans up nicely in sulphuric
s gold plate, and takes a beautiful

Items of Interest.

OF MANIPULATION FOR THE OF THE LOWER JAW WHEN DISLOCATED.

ROTH, M.R.C.S., L.R.C.P.

ed in an ordinary cane-bottomed chair ;
efore him with one foot placed slightly
the other just in front of the patient and

in the middle line. The operator is thus on a firm basis, with the legs well apart and fully extended. He then flexes himself at the hips and asks the patient to lean forwards and to place his forehead in the middle of the sternum of the operator's chest (but this position varies with the size of the patient's head). The operator now flexes his head so that his chin grips the patient's head about the upper part of the occipital bone; he thus aquires a firm hold and has the head well under control between his chin and chest. The thumbs, protected in the usual manner, are placed in the patient's mouth and the fingers of both hands grasp the lower jaw. In this position reduction is facilitated, and the advantages over the ordinary methods are as follows: (1) The operator has the head under perfect control and perfectly fixed; (2) the line of force exerted by the operator's hands acts in the same line as the resisting force exerted by the operator's chin; (3) the operator's elbow being well fixed, he can exert a greater power by the force acting through the thumbs being close to the shoulders, and it will be found that he has greater power of muscular action in the terminal phalanges of the same; (4) the patient's head is also in a better position for replacing a dislocated jaw; (5) the operator needs no assistant and does not inconvenience his patient by the excessive pushing and pulling about of the head during the reduction.

The Lancet.

TWO INTERESTING CASES.

By Dr. Thiesing, Hildesheim.

Miss W., 45 years of age, and of good health, entirely lost the sense of smell for two years without assignable cause. She had been under the care of several medical men, without the least improvement, so that the lady gradually accustomed herself to the belief that she would not regain the sense of smell. But for some time she also complained of a disagreeable, bitter taste, and for this a medical man treated her for five weeks, as it was thought she suffered from indigestion. The bad taste, however, did not disappear, and a second doctor sent the patient to the author for immediate attention to her mouth. On examination there was found a great accumulation of tartar and several necrosed roots, quite enough to account for a bad taste. At the first visit the tartar and three lower molar roots were removed. Her medical attendant had prescribed Miller's mouth-wash. No improvement took place for some days, and at a second visit the roots of both the upper and left bicuspids were removed. Eight days later the patient returned very pleased, and said that the bad taste had vanished, and that the sense of smell which had been wanting for two years had completely returned.

II. For some months a young girl had not been able to extend the fingers of the left hand, on getting up in the morning. By passive movements the fingers could be gradually extended in the course of the day, but regular work with the left hand was not possible. The patient came to the author because she believed the muscular contraction was caused by diseased teeth. She came to this opinion because in the morning she had violent dragging pains in the left lower jaw, which then spread to the left arm and hand but disappeared, gradually, during the day. On examination a very defective molar was found in the left lower jaw. This was extracted and when the patient returned after some weeks the pains were gone, and although the movement of the fingers was not quite normal, the condition was such as to lead one to expect a complete recovery.

Deutsche Monatsschrift für Zahnheilkunde.

GERMAN engravers harden their tools, says the *English Mechanic*, by heating them to a white heat and then plunging them into sealing-wax, continuing the operation until the tool is cool. By this method the steel becomes almost as hard as diamond, and when touched with a little oil is excellent for engraving or for drilling into other metals.

Reports of Societies.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The last ordinary Meeting of this Society was held Friday, March 3rd. W. Robinson Humby, Esq., V President, in the chair.

The Minutes of the previous meeting were read by Secretary, and confirmed.

Mr. L. Lavan was proposed for membership of the Soci to be ballotted for at the next meeting.

CASUAL COMMUNICATIONS.

Mr. ARNOLD PRAGER presented to the Society a r upper wisdom tooth, which showed a large amount of ex sis, and said that he had had to extract several roots from same mouth, and these were affected in the same though to a less extent.

Mr. HUMBY said he had recently met with a cas exotosis in a first upper bicuspid, which was misplaced, on extraction was found to be exotosed; and also a cas nodulated exotosis in a molar.

Mr. CHARLES W. GLASSINGTON presented an upper n showing what some might call a supernumary tooth, what he thought was a supplemental tooth, as it had much the appearance of the left lateral behind which it placed, he mentioned that the father has a similar tooth, said with regard to exostosis he found it generally occu in teeth that were very much worn, and mentioned a where a patient had sent for him to extract an upper n with a small crown cavity, this he did not think sufficie account for the severe pain from which the patient suffering, he advised patient not to have tooth extracte was sent for again, and he then reluctantly extracte tooth and found the palatine root exostosed.

Mr. HUMBY said that according to Mr. Bland St extra teeth were often found associated with cleft palate thought that gentlemen should look to see if there was tendency to cleft palate in those cases where supernu teeth occurred.

Mr. FARO presented to the Society a lower canine two roots.

Mr. **Humby** speaking of Pyorrhœa Alveolaris, said that he thought that the cause was generally mistaken, he thought that the disease was caused by death of a portion of the cementum in the root, and the lacunæ become charged with septic material, and thus set up irritation of the gum and absorption of the alveolus, and thought that if some drug was used that would coagulate the albuminous contents of the lacunæ, the disease might be arrested; and he mentioned a case in practice in which he had successfully used nitrate of silver, 30 grains to the oz.

Mr. **Charles W. Glassington** then read his paper on "Epulis," which we publish on page 289.

Discussion.

Mr. **Humby** thought that great stress should be laid on decayed stumps as a cause of epulis, and asked Mr. Glassington if he thought a local anæsthetic, as ether spray, might not be sufficient in small cases.

Mr. **Alfred Smith** said he had come across two or three cases of the ordinary character, in which the usual treatment had sufficed, and mentioned a case, where the epulis occurred between the left upper central and lateral; it commenced to grow in 1887, and was excised in August, 1888, and about twelve months after this, it came into his hands. He decided that the teeth should come out, and his friend, Dr. Scott, suggested that the cautery should be used. The operation was performed without any anæsthetic, and the patient said she felt very little pain. He saw the case twelve months after, and was still in communication with the patient, and there are no signs of any recurrence.

Mr. **Shefford** mentioned a case, which he had seen at the Hospital, the growth was situated between the left upper lateral and canine, and it was excised and the adjacent bone scraped.

Mr. **Farmer** said the case to which Mr. Shefford referred was a recurrent case and had been removed at Liverpool twelve months previously, he saw the patient again last summer, and the gum appeared normal but the teeth were separating.

Mr. **Nicholls** asked whether Mr. Glassington advocated any difference in the treatment between malignant and non-malignant epulis.

Mr. **Glassington**, in reply to Mr. Humby, said he did not think ether spray was sufficient for the removal of any epulis. In reply to Mr. Smith he said he had listened with great interest to Mr. Smith's account of the Thermo-Cautery and said he should certainly try it when an opportunity occurred.

He thought that in Mr. Farmer's case the epulis would be found to be recurring.

In reply to Mr. Nicholls he thought that if the case was plainly seen to be malignant, it should be sent on to a surgeon.

A hearty vote of thanks was then accorded to Mr. Glassington for his paper, and Mr. Humby then announced that the next meeting was put down for April 7th, and as some of the members would be away at Birmingham at the Annual meeting of the British Dental Association, he suggested that the April meeting should be postponed till a fortnight after the usual May meeting, and he knew that this would be more convenient to Mr. Farmer, whose name was down for that evening's paper.

This was then proposed by Mr. Chas. W. Glassington and seconded by Mr. Arnold Prager and carried, the meeting was therefore adjourned till May 12th, when Mr. Roughton will read a paper on "The Bacteria of the Mouth."

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

The ninth Annual Dinner of the above Society was held on the evening of Friday, March 3rd. in the large saloon of the Imperial Hotel, Edinburgh. Dr. Johnson Symington, lecturer on Anatomy, the Hon. President, occupying the chair, and Mr. F.J.Turnbull, L.D.S., and Mr. Fred Page, L.D.S. acting as croupiers.

After the loyal and patriotic toasts, the chairman proposed "The Edinburgh Dental Students' Society" which was responded to by Mr. F. J. Turnbull, L.D.S., the president elect. Other toasts were "The Incorporated Edinburgh Dental Hospital and School" proposed by Mr. Ivison Macadam, F.R.S.E., replied to by Mr. J. S. Amoore, L.D.S.; "The Edinburgh School of Medicine" by Mr. H. B. Ezard, L.D.S., reply by Dr. Craig; "The Guests" proposed by Mr. Goldie, replied to by Mr. J. A. Biggs, L.D.S., Glasgow; and "The Chairman" by Mr. Dilks Page.

An excellent selection of music was given during the evening, and great credit is due to the musical committee for this part of the programme. One good song, instrumental solo, or story, being rapidly followed by another, the principal dental contributors being Mr. Douglas Logan, who played selections and accompanied throughout the evening; Mr. Goldie, who sang a tuneful original dental song, entitled "Limited Liability": Mr. Andrew Wilson, L.D.S. who whistled, and Mr. Macleod, who revelled in stories. Pipe-Major Macdonald, the janitor of the Dental Hospital, who appeared in the garb of the regiment in which he served, played selections on his pipes during the dinner, especially emphasising the appearance of the inevitable "haggis."

An up-to-date menu card in black and white, the invention of Mr. Page, L.D.S. was one of the successes of the evening. The frontispiece, entitled "Macgregor's Gathering" showed a highlander with bandaged swollen face knocking at the Hospital door. In the inside, appeared the menu and toast list surrounded by pictorial dental jokes illustrative of phrases in daily use in dentistry, while on the back "A Dream of the Future" showed what might be expected of lady dentists.

There were over sixty gentlemen present, and altogether the event was one of the most enjoyable of many similar gatherings held by the students.

Dental News.

THE DENTAL HOSPITAL OF LONDON.

The 35th Annual Meeting of the Institution was held at the Hospital in Leicester Square on Thursday, March 9th, under the presidency of Dr. Charles J. Hare.

The Annual Report which was unanimously adopted congratulated the Governors upon the increased usefulness of the Institute; that the Annual Subscriptions amounted to £1,013 0s. 6d.; and that the Mortgage upon the present building has been entirely paid off. The comparison in the number of operations for the past year with those of the year 1874, when the Hospital was moved to its present quarters, bears testimony to the very great value the suffering poor attach to the benefits they receive at the Hospital—in 1874, 19,255, in 1892, 55,803. The resignation of Sir Edwin Saunders, a staunch and munificent supporter of the Charity, as Treasurer and Trustee, had been received with very great regret.

After much earnest consideration the Committee of Management have decided to purchase a new site, and to build a new Hospital; it having been thought " that reconstruction upon the present site is out of the question, and that the true interests of both Hospital and School will be best served by a new building on a new site of sufficient area, with ample possibilities of lighting." This conclusion was forced upon tho Committee for reasons which we have already published.

£40,000 will be required to carry out the proposed change and of this sum £6,000 has already been promised by the Staff, the past and present students of the Hospital and some members of the Dental profession, an additional £2,000 having been subscribed by old friends of the Hospital. The Duke of Cambridge, the President, cordially supports the idea of the proposed new Hospital and the Prince of Wales has sent a donation towards the amount required.

The following points are urged by the Commttee in seeking the support of the public to this most necessary undertaking:—

1.—That very considerable acute pain among the poor of the metropolis is relieved at the Hospital.

2.—That large numbers of necessitous poor are, under certain conditions, supplied with artificial teeth.

3—That the deformities in children's mouths, due to crowded and irregularly placed teeth, necessitate rectification.

4.—That the teeth of about 90 per cent. of the poorer population of London require treatment.

5.—That bad teeth are the cause of painful nervous and constitutional disturbances.

6.—That during the past 18 years there has been a large increase in the number of patients.

An admirable site is secured, and as soon as sufficient money has been subscribed the building will be at once proceeded with. The generous public may rest assured that this Charity is in every way a very deserving one, and the authorities are anxious that the whole sum necessary for the improvement shall be obtained before building operations are commenced, and the Committee cannot omit to allude to the remarkably generous way in which the past and present students have responded to the appeal for funds to build a new Hospital. The Dental profession as a whole has shown its high appreciation of the Hospital and School by also contributing largely to the fund. That a sum amounting to considerably over £6,000 should have been contributed by a profession to its representative Hospital is unique in the history of such Institutions, and should be a guarantee to the Governors, Subscribers, and the public, that a new building is urgently needed, which can only be provided if the laity subscribe with equal generosity.

THE DENTAL ASSOCIATION OF NEW SOUTH WALES.

At the usual Monthly Committee Meeting, held on January 27th last, (Dr. A. Burne in the chair), Mr. M. H. Nisbit, L.D.S. was nominated to a position in the Council of the above Association.

APPOINTMENT.

Montague F. Hopson, L.D.S. Eng., has been appointed Assistant Dental Surgeon to Guy's Hospital.

Mr. Harold Storer, L.D.S. Eng., has been appointed Assistant Dental Surgeon to Guy's Hospital.

VACANCY.

Liverpool Dental Hospital. The post of Demonstrator is vacant. Applications to the Dean, 50, Mount Pleasant.

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester, during the months of January and February, 1893.

	Jan.	Feb.
Number of Patients attended	821	1045
Number of Extractions	536	658
Number of Extractions under Anæsthetics	109	158
Gold Stoppings	46	85
Other Stoppings	116	216
Miscellaneous	321	141
Crowns	2	3
Irregularities	28	37
Total	1158	1298

J. C. LINGFORD, *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London. W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 606. LONDON, APRIL 15, 1893. Vol. XXXVI.

ANTRAL DISEASE.*

By Arthur B. Sibson.

The tendency of the present age is more and more in the direction of specialism. In the profession of medicine, we find this fact exemplified continually as time rolls on. The strikingly increased knowledge possessed by the public generally, demands it; and in complying with such a demand, those who devote themselves to the study of some particular portion of the human organism, with the object of becoming experts in the treatment of pathological conditions in connection therewith, are but yielding to the ordinary law which produces when there is requirement.

That branch of the Medical profession with which we, as students, are connected, is not behind in this march of intellect and in the future it will become the duty of the dental surgeon to treat all the pathological conditions of the mouth and such adjacent parts as the antrum. It is right that it should be so. The requirements of the various examining boards involve a great deal of the same education which the ordinary medical student undergoes—a training quite as arduous and exacting—perhaps more so—and why in the name of common sense the qualified dental surgeon should not occupy precisely the same position and respect as regards his medical brethren, just as the specialist in eye diseases, &c., does, I am at a loss to understand. If we, as dental students, qualify ourselves, and calmly, but quietly, assert our equality and our right to skilfully treat every pathological condition connected with the oral cavity, we *shall* occupy that position, and enjoy the privileges which we claim, not as a favour, but as a right.

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* Read before the Students' Society, Victoria Dental Hospital.

It is with a view of exciting greater interest in this subject that this paper has been written. The antrum, as you know, is liable to a variety of abnormal and pathological conditions which have a direct bearing and relation to the oral cavity.

Every dental surgeon should be able to treat fully all these conditions, which ordinarily fall within the province of the general practitioner. As a specialist in surgical science it becomes the duty of the dental surgeon to cope with these cases.

My desire to-night is merely to direct your attention to the important subject of Antral disease,—not to present anything strikingly original to your notice—and if I succeed in evoking an exhaustive and practical discussion, I shall have attained my object. As it would be obviously impossible for me, in the limited scope afforded by one paper to satisfactorily treat this subject as it deserves to be treated, (by allusion to all the abnormalities of the antrum), I have confined myself to the commoner diseased conditions of the cavity, leaving out altogether Epithelioma, Polypus, &c., which fortunately are much less frequently met with. I trust you will bear with me while I briefly sketch a few anatomical facts in relation to the antrum. The antrum, as you know, is situated in the body of the superior maxillary bone, its roof forming the floor of the orbit, and inferiorly corresponding to the alveolar process immediately above the roots of the 1st and 2nd molars and bicuspids. The roots of these teeth sometimes pierce the floor of the antrum, and hence may easily be explained, its

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opens into the nasal cavity by means
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by inflammation. First, it becomes
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ore serous and more acrid. An offer

sive odour is given off, and the membrane becomes thickened. Why do these changes take place? There is always a cause which excites inflammatory process. It may be due to mechanical violence, as a blow on the face, or to the introduction of foreign bodies, or it may happen through the obliteration of the nasal orifice or even undue pressure during a hard labour at birth, but most commonly by dental irritation. Let us draw our attention to the latter. The teeth are affected and become carious; this being neglected, the pulp ultimately dies, and in due course an alveolar abscess forms at the apex of the root which happens to lie close to or even penetrates the floor of the antrum, and thus the inflammation extends to the lining membrane: the septic matter continuing to form until the cause is removed. It is my belief from the perusal of the many recorded illustrations of this, together with its allied and dependent affections of the antrum as well as by enquiry, from men in private practice, that irritation resulting from the teeth affected by caries and other dental diseases is by far the most frequent exciting cause that can be found.

So far, then, we understand the causes and conditions of inflammation set up in the antrum, which unfortunately through neglect or ignorance, frequently becomes chronic, and may remain undiscovered for months, or even years. Very soon the case is one of empyema, which is the general sequence of chronic disease. Antral empyema is a collection of pus in the antrum, which becoming putrid gives rise to great irritation, involving the whole of the lining membrane. The symptoms vary greatly. Often the patient notices that on leaning the head forwards or to one side, a discharge of matter makes its way into the nostril, and an offensive odour perceived by the patient more than by others. It may be unattended by pain, although an acute case may cause very severe pain, disturbing the system generally. A deep seated dull, aching pain may be felt, headache, and neuralgia, attended by local heat, and sometimes fever. The molar and bicuspid, or other involved teeth may become painful and very tender on pressure. If obstruction occur at the nasal orifice, then other symptoms are noticed. If the secretion of matter be very great, the antrum becomes distended, and its walls considerably thinned, the teeth in relation therewith are depressed, preventing closure of the mouth ; the palate on the affected side assumes a convex shape, the nasal wall is bulged, and the floor of the orbit may be pushed upwards. Crackling fluctuation may be felt by pressure of the finger on the distended walls, and if an outlet be not quickly established, perforation may occur anywhere, though it generally points to the cheek, and a fistula is formed.

The diagnosis of empyema is not so difficult as might be imagined. The symptoms just recounted, if present in a patient, will most probably be sufficient to demonstrate its reality ; but one should not be satisfied until a thorough diagnosis is performed.

The patient may lie across a chair or on a sofa, with head downwards, and not too low, and the affected side uppermost for about twelve seconds. Upon resuming his upright position without either nasal expiration or inspiration, a collection of pus will be observed in the middle meatus, having run from the orifice. This method, of course, will be in vain if obstruction of the orifice has occurred. Link has recommended percussion ; he obtained a round wooden stick, a finger in length, and pressing it on the hard palate near the second molar, percussed the free end with his finger ; if he heard a clear sound he concluded that the antrum was empty, and healthy, but if it appeared dull, a collection of fluid was certain. He therefore says, " Percussion of the antrum alone is sufficient to enable us to make out whether the cavity is empty, or whether it is filled with fluid or a solid mass."

There is yet another method of diagnosis, unique, and well-deserving of our consideration, and before passing on to treatment, I propose just to mention briefly the outline of it. The examination of the pharynx and larynx by the illumination from an incandescent lamp, has been proved to be also successful in diagnosing the presence of pus in the antrum. This may be done in the following way :—In a well darkened room with electrical apparatus for lighting purposes, a small Edison's (5 volt) incandescent lamp being used, the examination may be performed. The tongue of the patient should be firmly pushed down and depressed, the mouth closed, and the contact made. Under normal conditions the whole of the bony structures of the face up to the orbit on both sides alike are illumined, but under abnormal circumstances, the difference is at once perceived. If empyema, or any solid growth be present, the diseased side will remain dark. This method has been tried with positive success, and merits, I believe, a great deal more attention than it has received. The treatment of empyema is often a long and tedious one, especially if it has arrived at a chronic state.

Whether the disease be simple, or more advanced, it is always advisable to remove, immediately, any suspected teeth or stumps. Sometimes roots may be concealed for years, and have been totally unsuspected. It is, therefore, a safe rule to remove all carious teeth from that side which is affected. If the case is a simple one, a leech may be applied to the cheek, after the above rule has been attended to. Hot fomentations and purgatives are also beneficial. The symptoms will often entirely disappear upon the removal of carious teeth, or stumps.

But if true empyema has been thoroughly established, it will almost always be found necessary to perforate the cavity. This may be done sometimes by the extraction of a tooth alone, a fang of which penetrated the floor of the antrum ; but otherwise an entrance must be made by means of a trocar.

where must the cavity be tapped?
It may be noticed that the abscess
h the skin of the cheek; the opening
here, but in one of two places; either
all of the nasal fossæ. As to the best
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guided by our own judgment and
says, "that in the great majority of
molar is the offender; it is more apt
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ads to the sinus most readily." "It
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the antrum without a good sized opening. A canula can be then inserted to prevent closure and to facilitate draining and cleansing. It should be well washed out with warm water injections until it runs down the nostril freely. After this, antiseptics and astringents should be used, such as a weak solution of Permanganate of Potash, then perhaps a carbolic solution of ʒi to ℥viij strength. These cases being, however, very often long and tedious, it is necessary to resort to some plan preventing closure of the aperture, or the entrance of foods, etc., into the cavity. An impression may be taken and a plate struck up, upon the upper surface of which is soldered a tube just long enough to reach into the antrum, a cork is fitted to the tube and removed for cleansing purposes. When the lining membrane becomes healthy, the tube is of course taken away, and a small sheet of metal soldered over the opening in the plate, from which the tube has been removed.

I have now briefly recapitulated the methods of treatment which are most commonly adopted; but this paper would, I think be incomplete, if I were to omit another form of treatment, which deserves our special attention, in that its method is very simple and easy of manipulation, and also thoroughly reliable. I refer, gentlemen, to the very successful treatment practised by Mr. J. W. Dunkerley, well known to us all, who, having selected antral disorders as a special study, has endeavoured to 'treat the numerous cases which have fallen to his lot; the results have been highly satisfactory to himself, and everything that patients could have desired under the circumstances. Having obtained permission, I could not do better than present to your impartial consideration the history of one such case, illustrative of a somewhat original form of treatment.

Mr. A., a man of middle age, called upon Mr. Dunkerley complaining of pain in the upper jaw on both sides. On examination, all the upper teeth were found to be present save three, namely, the two centrals and left incisors. He was wearing an artificial plate, to which were attached two drainage tubes communicating with a cavity in the pre-maxilla, formed by exfoliation of necrosed bone. The denture (with tubes) was removed, the cavity scraped and well cleansed, a good sized pledget of wool and dry iodoform was introduced. At the same time empyema of both antra (having been suspected), was clearly diagnosed. On June 19th, 1890, the molars and premolars (being but very loosely held in the alveolus, and the gum surrounding them charged with pus) were extracted. The antrum on each side was fully exposed and scraped, the cavity being well washed with phenate of soda, of 50 mins. to half an ounce strength, by repeated injections from an ordinary mouth syringe, care being taken to establish a perfect flow through the nasal orifice into the nose. A probe could then be easily passed through under the canines into the diseased pre-maxilla, which was eventually discovered along with the contiguous alveoli to be nothing but a mass of necrosed bone. Although, at first, it was the intention to save the two canines and right lateral, they now had to be sacrificed, and were removed on July 19th. These three cavities were cleansed regularly three times a week and injected with dilute phenate of soda, a tumbler-full being used on each occasion ; between these operations, the cavities were plugged with cotton-wool and iodoform. After some weeks, signs of returning health became apparent, and as the case progressed, the plugs were diminished in size each time after cleansing, the strength of the injections was also diminished. The formation of granulation tissue gradually filled up the space, every care being taken not to injure the newly-formed tissue when inserting the pledgets of wool. The mucous membrane at the same time healed and closed around the openings, that of the pre-maxilla being the last to heal. On May 5th, 1891, a temporary set of teeth was supplied. That part of the vulcanite plate to come in contact with the healing mucous membrane was roughened, and gutta-percha was made to adhere, so as to form a soft pad. On November 2nd, a permanent case was inserted, and Mr. A. has done well ever since.

In cases of Empyema where no tooth is suspected as a cause, Mr. Dunkerley advises the extraction of the second molar, and would always puncture the antrum through the alveolus; should the facial wall be distended, pressure ought to be exerted on it until symmetrical with the corresponding side. The opening is generally made through the anterior buccal socket with a large trephine, so that the small finger can readily pass through, perfect exploration and a facilitated means of cleansing being thus gained. The use of drainage tubes are *altogether discarded.* Special care must be taken to scrape away any carious bone which may be present. The entrance of food, and the tendency of the opening to close, is in each case prevented by the plugs of wool. If the mucous membrane should prove obstinate when the closure is desired, flaps are reflected around the orifice, and by this means, together with the simple process of granulation, the difficulty may be overcome.

In connection with Empyema, we ought not to omit that affection of the antrum known as Hydrops Antri, but which really is the engorgement of the sinus caused by the obliteration of the nasal orifice, and is more often an effect, than a cause of disease. When this occurs the secreted mucus accumulates, and, finding no outlet, causes the extension of capacity, by distending the walls of the cavity. The mucus may be quite healthy, but generally it becomes purulent, and sets up diseased action by pressure on the membrane; the bony walls being not unfrequently affected by thinning and necrosis, which, on slight pressure, crackle like parchment. Upon extraction of a molar tooth a considerable part of the floor of the antrum may come away with it. Such is the case of a woman of about middle age, the details of which, together with the specimen, have been supplied to me, by a very able member of our dental profession. The details are only brief, but I will give them as they were given to me :—"The lady came to me," he says, "to be supplied with an artificial denture. There were no teeth in the upper jaw, with the exception of the left wisdom tooth. This was mal-placed, being twisted to the buccal aspect, and I deemed it expedient to extract it, in preparation for the denture. To my surprise, the tuberosity of the superior maxilla came away with the tooth, no excessive force having been applied. I found that the patient was suffering from Empyema of the Antrum (before unsuspected). There was a history of Polypus, for which she had been previously treated. In conjunction with her medical attendant, the ordinary treatment was adopted ; a drainage tube being adjusted to prevent the aperture from closing until the cavity was free from disease, and in a healthy condition."

This may be one of the few cases of disease, originating from an exciting cause, other than that of dental irritation. We are led to suspect, by the history of Nasal Polypus mentioned, that the orifice of the antrum into the nose, was probably affected; and it was eventually closed by the inflamed and congested membrane. This, of course, would cause in due time engorgement of the antrum, the accumulated secretion of which would gradually become purulent. The treatment to be employed in such cases is much the same as in the so-called abscess. Care must be given to the removal of all carious bone, after which a thorough system of regular cleansing is to be adopted ; thus to establish an aseptic condition, ensuring a more speedy and certain return to the normal and healthy character of this cavity.

CONTINUOUS GUM WORK.*

By E. HOUGHTON, L.D.S.

Mr. President and Gentlemen,—I am not going to
mence my paper with the usual apologies of inability, &c.,
will only say that in responding to the request of our ener
Secretary, I am only doing what I think is my duty in gi
some time and trouble in preparation of something to
before you in return for much profitable information rec
by me from others. A rule making it compulsory f
members to give a contribution of some kind within ce
intervals of time would simplify our Secretary's work,
make our list of active members much larger; benef
alike the Society as a whole and each individual membe

Of course, we could not expect that all communica
would have the same value; some would be more val
than others, but we should be sure of one thing; that
would do his best, and the standard would graduall
higher.

My contribution to-night will probably be one in
there will be considerable room for improvement, bu
raises a discussion on a very interesting subject it will
answered its purpose.

Continuous gum work seems to be almost one of th
arts, as up to the last few years it has not been practis
any large extent since the time when Dr. Allen, in
made it popular with some beautiful specimens of work
ship. This popularity quickly waned when its rival, vulc
came into general use. It was soon found that vulcanite
be much easier worked than continuous gum work, an
much more profitable to the dentist on that account.
ever, I see no reason why continuous gum work shou
become as generally used in the present time as its

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* Read before the Manchester Odontological Society.

good qualities entitle it to be. I do not think it will ever take the place of vulcanite especially in the cheaper class of artificial dentures, but I do think that with the improved materials and appliances in hand at the present time, it ought to be more generally used by those members of our profession who wish to render the best possible service to their patients.

When used in the right cases it stands far ahead of all other methods of providing substitutes for the natural organs.

My object to-night is simply to give my own experience in the work, and to bring before your notice as many of the various kinds of gum body and enamel as I could get together, to enable you to compare them, and to discuss the general character of the work.

I was first induced to take up this work some years ago, by witnessing a demonstration at the Manchester Dental Hospital, at one of our Society meetings; the first difficulty was to get a furnace in which sufficient heat could be generated to fuse Allen's body and enamel, which was practically the only one in the market at that time. A coke furnace I objected to, on account of the difficulty and time taken in getting it into working order; so I invested in one of the gas furnaces that was brought out about that time, only to find that it was a failure, and required more leg exertion than I approved of. However, the difficulty was mastered by the construction of an entirely new furnace with which I have been working since, with varying success.

This being new work to me, I decided to exercise a little caution in using it, so I selected cases where I knew I could watch the results. My first method of working was to combine continuous gum work and vulcanite, as by so doing I thought I could reduce the weight, and ensure a more correct fit. But theory and practice do not always agree, and I have come to the conclusion that unless such work is made removable from the vulcanite base, it is a delusion and a snare.

The difficulty of removing a continuous gum facing without destroying the vulcanite base, and in many cases the facing also, entirely counterbalances any advantage or saving of cost in the combination of the two. Add to this the impossibility of making a vulcanite base sufficiently rigid to support a continuous gum facing, for I found that the elasticity of the plate caused the enamel to chip away from the platinum base. I have a piece here in which that result is shown, this was one of the first I made, and was worn for about two years.

The most successful case I had, was a continuous gum facing on a gold base plate, it was an upper denture with the second bicuspid present. I fastened the incisors, canines, and two bicuspids on a No. 4 platinum plate which covered the alveolar processes only, and fitted over the gold plate; I fastened this at the side next the natural bicuspid with a gold screw through the gold plate, and I allowed the platinum plate to pass under the tube molars at the other side; this has been worn in the mouth for three years without accident. I have a duplicate set which I made at the same time, which I am pleased to say has not been required, so I am enabled to show it to you to-night.

The principal difficulty in making facings is the large amount of warping which takes place in firing. This warping is much more extensive in narrow plates than in full dentures, and is a very serious objection to their use. I have prevented it to a certain extent, by fastening a stay across from each end of the plate, but I cannot recommend the use of narrow plates.

I have a case with me in which I have endeavoured to make a removable gum facing on a vulcanite base; this plate warped quite one-sixteenth of an inch, and I found it necessary to make the vulcanite plates after making the facing.

The method of fastening which I have adopted is to use two Bonwill bicuspid crowns, through which I pass screws which fasten into tapped plates, vulcanised into the base plate. I have also left three flanges on the palatine border of the facing through which I can pass small rivets or screws. This makes a strong and easily removed facing, but it is more troublesome to make than a complete platinum plate. I have made it to the same model which I used for the denture made with Rose's compound, so as to form an idea what saving in weight, if any, there would be by making it in this way. To my surprise I found that the vulcanite plate with facing, weighed more than the all-porcelain piece. I think this is owing to the extra stays required on the facing plate, on account of its being so narrow. This method of fixing could be adopted with advantage in lower dentures where the warping of the plate may interfere with the correct fit of the piece. It would also allow slight alterations in the lower plate to be made without interfering with the continuous gum facing.

The best method, in my opinion, is the old one, viz., using when possible continuous gum teeth, but when not suitable the ordinary pin teeth will answer. Solder those teeth to a fine soft platinum bar plate, No 3 or 4 gauge, carefully filled and rimmed with wire round its edges. Such a plate can be easily and quickly adapted to any model, and will not warp during firing. It is advisable that the teeth should rest on the base plate to give them steadiness and that all soldering should be done with pure gold, using as little as possible as excess of gold about the plate tends to make the body in contact with it porous. I have a plate here that is ready for applying the first coating of material, which I pass round for inspection. The plate should be boiled in acid before firing to eliminate all traces of borax, &c.

I think you are all familiar with the method of applying the materials, so I shall at once pass to the consideration of the various compounds I have been using. I have been able to secure samples from five makers and have made up specimens of each.

The first I will mention is Allen's, prepared by the S. S. White Co., according to the formula of Dr. Allen. This body and enamel is the best for colour of any that I have tried, but the great drawback is the intense heat required to fuse it, and when fused there seems to be more liability for the enamel to crase. It requires firing very carefully but when completed satisfactorily more nearly resembles a natural gum colour than any I have tried. The time for fusing the body is 12 minutes and the enamel 15 minutes. The next I will mention is a material prepared by Dr. Close for the S. S. White Co.; it also seems very good, but the colour of the enamel is not so good as Allen's ; it fuses at a slightly lower temperature than Allen's, and does not seem to crase.

Another American compound is one prepared by Dr. Tees. I have made several pieces with this material and found it very satisfactory. The colour looks well in the mouth, and the enamel fuses at a lower temperature than either of those already mentioned.

There is one drawback to the American productions, they all require American teeth to be used, as the English teeth will not stand the high temperature necessary to fuse the enamels.

The best teeth I have used are those made for continuous gum work, the long fangs are useful for fitting down to the plate, and the long single pin simplifies soldering very considerably.

We now come to the English makers; and first I must mention the material of Mr. Rose. I think the profession will owe Mr. Rose a great debt if he succeeds in producing a gum body and enamel to work at a low temperature, for it will make the work much easier and simpler. I do not think the colour of any of the low fusing enamels is equal to Dr. Allen's, but that may only be a question of time. I feel sure that Mr. Rose is on the right track.

I have several specimens here, some kindly lent me by the Dental Manufacturing Company, made by Mr. Rose, and I have one piece made by myself, from the same body.

It is easy to work, and can be used without a platinum base, but as I said before, the additional cost of making a platinum base is compensated by increased strength and easier mode of working.

There is a very great difference in working American gum enamels and Rose's. In the American enamels, the fusing point is higher than the fusing point of the body. In Rose's the fusing point of the enamel is lower than the body, and it is by taking advantage of this fact, that it is possible to work without a platinum base.

Another point of difference is thatRose's compound will maintain its shape much better than the American. Rose's sets moderately hard, but the American bodies become crumbly and difficult to handle when dry. And again, to get the best results when working with American bodies, it is necessary to thoroughly fuse it before applying the enamel; with Rose's that is not necessary, in fact, it is not recommended.

The next and last is one that resembles Rose's very much in colour and fusing properties,and I think will be a very good material. I have had very little experience with it, but perhaps Mr. Simms will give you more information than I can, as he has used it more frequently than I have. It is made by Messrs. Ash & Sons, and can be used with their teeth.

In conclusion, I will ask you to consider a few of the advantages and disadvantages of this class of work. Take the disadvantages first. Weight is one of the principal objections to its use, but this is more apparent than real, as little extra weight is noticed more out of the mouth than in it. I weighed the heaviest piece I have here, against a gold upper denture about the same size, which was fitted with blocks. The gold piece was 2 dwts. heavier than the continuous gum piece, and was worn with comfort.

I think the greatest objection is the amount of uncertainty as to the results when making a continuous gum denture. It is only ordinary work in the first stage: viz., fitting very accurately the base plate and adjusting the teeth to the bite correctly, afterwards soldering with pure gold. Up to this stage all is straightforward. The trouble commences afterwards. The first one is the warping of the plate. This does not occur in a full upper denture, but in a lower denture or gum facing it is a great trouble.

The next difficulty is firing. With all the present furnaces there is an element of uncertainty about this stage. It is impossible to know what the temperature of the inside of the furnace is, thus making the correct firing a matter of luck almost, as if the work is not correctly fired, the results are not nearly so good.

If a furnace could be made with an arrangement for automatically registering and regulating the temperature, all the difficulties in making continuous gum work would be overcome. I think this is only a question of time. The use of a low-fusing body will simplify matters, as it is very much easier to construct a furnace, such as we require, to work at comparatively low temperature, than at such high temperatures as the American compounds require.

The next difficulty is expense, and the practical question is, will it pay the practitioner to do the work?

This is a question that each man will have to answer for himself, as professional men should strive to do the best possible for their patients, and I can say this, that my experience of it so far leads me to think that if the appliance can be

s work that can be done at the same fee
same time I do not think that this class
the guinea-jaw man, as it requires a
ll than he can command.

es that continuous gum work possesses, I
two opinions. Its adaptability to any
certainty with which the contour of the
; its natural appearance; and last, but
te cleanliness; all these considerations
one of the best materials for artificial
nd, and more particularly for those thick-
ould make vulcanite conspicuous by its
mblance to the natural gums.

er to a conclusion. I have not given you
he composition of the various compounds
experience in making them, so cannot
hem than what you know already or can
s text books.

you what I have learned from my own
hat I could learn from text books, as I
n I say that practical information is
hen, any of you wish for more informa-
l to give it you to-night, or in a more
e future occasion.

USE OF CHLOROFORM AS A NARCOTIC
ld recently by Mr. A. Braxton Hicks as
. Joseph Thomas Boyd, L.S.A. The
ead in bed with a piece of cotton wool,
n, beside him. He had gone to bed soon
upper, and it would appear had inhaled
sleep, to have been seized with vomiting
ked by the vomit.

ANÆSTHETICS.*

By PERCY EDGELOW, M.R.C.S., L.R.C.P.

LECTURE V.

Chloroform is a drug concerning which a diversity of opinion exists as to its safety as an anæsthetic agent. There are its advocates who assert emphatically that no danger need be apprehended as long as the breathing proceeds with regularity, and that the respiration alone should be watched. Others, while admitting that the respiration usually gives the first intimation of a poisonous dose, maintain that heart failure at times precedes respiratory embarassment. They advocate observation of the pulse in addition to watching the respiration. There is one fact, however, that stands out prominently amidst the controversy, i.e., the painful cycle of mortality. Scarcely a week passes without a record in some medical journal of a death in connection with the use of Chloroform.

I am a strong opponent of its employment in dentistry, except in a very small minority of cases. I have occasionally used it for young children requiring the removal of several teeth, and these are the instances to which I confine its use, and they are always cases in which from a former experience I have been unable to obtain a satisfactory anæsthesia with gas alone or in connection with a breath or two of air. I do not consider the urgency of any dental operation in an adult, commensurate with the risk connected with Chloroform anæsthesia. It is quite another matter in cases of grave surgical preceduure, when it is inadvisable to use ether.

The purity of the drug is absolutely essential. Any sample containing hydrochloric acid or free Chlorine should be instantly discarded. To ensure its stability it should be kept in the dark in a well-stoppered, air-tight bottle. You will gather its physical properties from the specimen handed round. Here are some of the various apparatus in use for administering it. (Mr. Edgelow here described the open method of giving Chloroform and the phenomena witnessed during its inhalation). The safe percentage of chloroform vapour is below 4.5. Lister has ingeniously proved that this is the proportion breathed when the usual amount of about a drachm is sprinkled each time on the cloth and the air allowed to freely mix with the vapour.

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* Abstract of the closing Lectures in a course delivered at the National Dental Hospital, during the Winter Session, 1892-1893.

There are certain definite precautions that should be observed. The patient should not have partaken of food within four hours of the operation. He should have been subjected to no physical exertion on the day of the operation.

If much nervousness with weak heart's action be present, half an ounce of whiskey or brandy should be given some few minutes before inhalation. A recumbent position should be ensured. Whilst under the influence of chloroform no sudden alteration of the position of the body should be attempted. After the operation the effects of the vapour should be allowed to quietly pass off, the patient being permitted to remain in much the same position until consciousness has completely returned.

Any cessation of breathing, a weak and fluttering condition of the pulse, or sudden dilatation of the pupil in connection with deep narcosis, calls for the immediate stoppage of the administration and efforts to restore the respiration must be instantly adopted. Recollect that extreme lividity and marked pallor are symptoms of danger ; in the one case asphyxia is threatening, in the other syncope. Dilatation of the pupil may also occur when vomiting is imminent. A continuance of the administration often serves to arrest the sickness, the pupil recovering itself. It is hardly necessary for me to emphasize the vital importance of recognising whether the dilatation be due to overdosage or be premonitory of sickness. It strikes you at once.

Should you ever be called upon, in the absence of gas and ether, to administer chloroform for dental requirements, my advice to you is to put your patient under completely. Do not content yourselves with inducing a very partial anæsthesia, a sort of "just enough to deaden the pain" condition, which is at times heard of. It is in such a state that danger exists. A large proportion of fatal cases have occurred in dental practice, results attributable in great measure to this half-and-half method of procedure. Brunton explains this as follows: When a tooth is extracted in a waking person, the irritation of the sensory nerve produced by the operation has two effects, first, it may, acting reflexly through the vagus cause stoppage of the heart, and a consequent tendency to syncope; second, it causes reflex contraction of the arterioles which tends to raise the blood pressure, and counteract any tendency to syncope which the action of the vagus might have produced. In complete anæsthesia all these reflexes are paralysed, and thus irritation of the sensory nerves by the extraction of the teeth has no effect either upon the vagus or the arterioles. In imperfect anæsthesia, however, the reflex centres for the arterioles may be paralysed, while the vagus centre is still unaffected."

The Glasgow Commission, Professor McWilliam, of Aberdeen, Drs. Lauder Brunton, Lawrie, Shore, and Gaskell, have been prominent workers in the field of experimental research in connection with the action of chloroform on the circulatory, respiratory, and cerebral organs.

The A.C.E. mixture which you see in this bottle, is composed of one part of absolute alcohol, two parts of chloroform, and three parts of ether. It is preferred by some to r alone, the ether counteracting in some ssant effects of the chloroform, whilst the ates the irritant effect of ether on the s membrane. A very convenient way of with a Rendle's mask. Due regard to the hould be observed.

Methylene as an anæsthetic agent has rful support of Dr. Richardson and Sir There is little doubt that it is simply a form with methylic alcohol. It is more than ether, and is usually administered aler. The same precautions adopted with be observed during its exhibition. Many ed its use.

hyl was first used for anæsthetic purposes eeds, in 1849. In Germany, it has been ll operations, and many American surgeons it. It is given with a practically total rom one to three drachms being poured Useful as it undoubtedly is in some of the n surgery, there is little risk of its displac- as a routine anæsthetic in dentistry. It ame time to produce unconsciousness as es, and the anæsthesia lasts for several After effects are more pronounced, there dizziness, nausea, depression and hysterical

ed as an anæsthetic many years ago, but rity. Lately, it has again been brought ecially in Germany. It may be administered method or with Junker's inhaler. Two or m sufficient to induce an anæsthesia of some and though consciousness may not be in e, sensibility to pain is absent. Wood, in

America, from experiments conducted on dogs, conside administration to be attended with some danger of arr the heart's action. On the other hand, Hollænder & W who have had much experience with it, consider it to safe anæsthetic.

For the production of local anæsthesia, cocaine, ch of ethyl, and the ether spray, are the most commonly emp agents.

Cocaine is an alkaloid obtained from the leav erythroxylon coca. It is usually employed in the form hydrochlorate or citrate. A solution of the hydrochlor water of the strength of from 5 per cent. to 20 per c used both for painting on the surface and for injection the tissues. It desensitizes the nerves in the imm neighbourhood of the injection. Whilst of much serv some of the domains of minor surgery, it cannot co with nitrous oxide in general efficiency as a means of pai extracting teeth. When used with this intention, necessary to inject from half a grain to a grain, deepl the gum on each side of the tooth. The insertion needle is by no means painless, although the discomfo be mitigated by first drying the gum and then paintin it a 20 per cent. solution of the drug. After the inj about ten minutes should be allowed to lapse before extr and even then it may quite fail to effect the object ai Moreover, patients are very differently acted upon by c Alarming symptoms of faintness, giddiness, dyspnœa, tion, precordial anxiety, profuse perspiration, and dil of the pupil have followed its injection. As a surface a tion, Hern finds it of use in such instances as the adju of clamps and separators, the introduction of wedg application of ligatures for rubber, the manipulation cervical edges of cavities, whether for excavating, trimming or polishing, the removal of tartar in p elling of sensitive and irritable mucous

yl is a clear liquid with a very low boiling By its exceedingly rapid evaporation when and mucous membrane it quickly freezes g and numbing the part. It may be con- in small glass tubes, the warmth of the y to expel a fine jet of fluid. This is part to be anæsthetized at a distance of s, and is allowed to play on it for about a ess of freezing and the return of the part n is often accompanied with pain, which severe. When used in dentistry the jet on to the gum on each side of the tooth, ane of the cheek and surrounding parts a layer of cotton wool.

ERE LIQUID DENTIFRICE

...	2 oz.	Oil of cloves ...	10 drops
	1½ ,,	S.V.R.	1 oz.
...	2 drs.	Solution of carmine (N.F.), a sufficiency	
...	½ ,,		
	½ ,,	Proof spirit to make 16 oz.	

p-bark with the proof spirit and glycerine; the percolate add the oils dissolved in ld the salicylate of sodium and sufficient to colour. Shake thoroughly and filter , returning the first portion of the filtrate and add enough proof spirit through the measure 16 oz.

British Journal of Dental Science.

LONDON, APRIL 15th, 1893.

ACROMEGALY.

FOR much the same reason that we called attention to the characteristic symptoms and diagnosis of Rheumatoid Arthritis, we now wish to bring to the notice of our readers some remarks upon another disease with which dental practitioners should have some acquaintance. It certainly seems a rare condition, or perhaps we should rather say that many cases have not yet been recorded, less than fifty having been described. But inasmuch as some of its most peculiar phenomena are manifested in connection with the mouth and jaws, it appears right that our profession should cultivate its opportunities of observation, and be ready to assist in the elucidation of much that is waiting to be made clearer. We remember that, not long ago, at a meeting of the Odontological Society, a member had in attendance a private patient who presented a peculiar enlargement of the lower jaw. No definite explanation was forthcoming; but a surgeon of world-wide fame, who was also present, expressed an opinion that future watching of the case might show it to be an instance of Acromegaly.

PIERRE MARIE pointed out the group of symptoms which demanded an addition to the nomenclature of the diseases to which flesh is heir, and has demonstrated the condition at *la Saltpetriere.* A description of the facial and buccal deformities which this newly-recognised disease brings how it is that the patient's appearance oundly changed. The eyes appear large, o the extent of allowing confusion with :re. The eyelids are often long and thick, nstantly exaggerated in all its dimensions, nd projection forwards; the nostrils and this enlargement. The cheeks are ng, not because of the hypertrophy of the IARIE at first thought, but because of the ntrum. The mouth is remarkable for the ments of the lower lip which is turned itwards. This is considered characteristic. nts an enormous mass, being large and y long. The palatine arch is widened, and t palate and uvula show an increase in icularly directed attention to the projec- aw. In consequence of the development teeth no longer articulate, and, in the e teeth of the upper jaw were distant a rom those in the lower. He recounted a on made in a case of this kind in America. eing able any longer to occlude his teeth, dentist, who extracted those in the lower hem with a piece situated further back, ith the upper teeth. Soon, the projecting ued to grow, the dentist had to put the tus still further back. Upon a third the same reason, the practitioner extracted for which he substituted a set corres- st. The end of the story was not known, impossible to say which got tired first, dentist.

e symptoms of acromegaly are found in ne hands and feet. They are increased in kness, but not in length, and the digits haped. As accessory symptoms, according l review of acromegaly, the thyroid is n size, the external generative organs are hypertrophied, but the uterus and testes are atrophied, so that sterility results. Headache is a prominent subjective symptom; pain in the limbs, impaired vision, increased appetite and thirst may also be looked for. The onset of acromegaly is indefinite, and the course slow. The bony changes take place gradually until the patient cannot be recognised. As to the cause of this disease, opinions vary, and as yet are rather speculative. It begins in early adult life, each sex is equally affected, and there does not seem any reason to think it is hereditary or congenital. One theory would connect it with a persistent thymus gland; another regards it as "an inversion in the evolution of the reproductive life," and MARIE considers it depends upon a pathological condition of some organ (as yet unknown, but possibly the pituitary body) which has a trophic function. Myxœdema, osteitis deformans, and certain forms of chronic rheumatism have been mistaken for it, but the diagnosis is not difficult. The disease lasts ten, twenty, or thirty years, but there is no tendency to recover. Both the *Lancet* and the *British Medical Journal* have recently reported cases, illustrated by characteristic portraits. In the first instance, that of a female, aged twenty-seven, the lower teeth were in normal relation to the upper, but they were very bad, and were separated. An upper plate, with four incisors and a canine, which originally fitted, had become loose, and there is now room for another tooth beside the right canine. The other case is also interesting, as the patient was a negro boy, aged ten years.

AN UNFORTUNATE CASE.—*Die Zahntechnische Reform* says that a sensation has been caused by the death, at the age of twenty-eight, of Tesch, in Berlin. He had a tooth extracted, the operation being performed by a dentist living in "Unter den Linden." Soon after, bleeding began, and continued from Friday till Monday, so that at last the patient was obliged to go back to the dentist, who now stopped the hæmorrhage. But apparently the wound had already become septic, for symptoms of blood poisoning appeared, and progressed rapidly. By Wednesday, it was necessary to remove the patient to Bethanien, where, some days later, he died in great pain.

Effects of Opium Smoking.—M. Baret has collected a large number of observations, which have led him to the following conclusions :—1. Opium smoke is not, either morally or physically, the destructive and degrading agent that certain moralists have declared it to be. 2. Its use is not more dangerous than the use of tobacco or of fermented drinks. 3. Its abuse is less dangerous to the individual than the abuse of alcohol. Chinese doctors and many other medical men practising in China, India and Malayan countries are of opinion that the habitual use of opium is an excellent prophyllactic against malaria. Finally, it is stated that when it is necessary to make a great effort without being able to obtain nourishment, opium smoking acts as a general tonic and an economising agent superior to alcohol and to coca. As to its mental action, it is the most powerful physical tonic existing.

Macroglossia—A boy, aged five years, has recently been under treatment in the Devonport Hospital. The tongue had always been large and a ranula had been operated upon two or three times. On admission the tongue was some three inches outside the mouth, it could be withdrawn to within half an inch of the lips. It was uniformly enlarged, and not ulcerated, although there was a great tendency to the formation of crusts. The teeth under the tongue were turned down forwards by the weight of the organ, and there was a complete sulcus on the under surface where the teeth rested. There was no pain and not much inconvenience. The boy could manage to eat solid food, using the molars of one side only at a time. Under chloroform, a wedge-shaped incision was made partly with the knife, partly with scissors. The fore part of the tongue was removed, and the sides brought together with silk ligatures. He left the hospital without much sign of any operation, and his speech was much better.

COCAINE IN SURGERY.—RECLUS, in *La Semaine Medicale*, thinks cocaine is a most valuable agent under certain conditions, as it enables delicate and important operations to be performed without assistance, and its use is not attended with the same risk as chloroform. He has used it for amputation of the forearm, in the case of an old man of 83, who was worn out with prolonged suppuration. The solution was injected into the various tissues as they were met with. He thinks that stronger solutions than one or two per cent. should not be used, and that the dose of cocaine injected should not exceed from two to three grains. The patient should be recumbent. The fluid is to be introduced gradually, and from three to six minutes allowed, according to the strength of the solution, before the incision is made.

A SPLINT FOR THE LOWER JAW.—Mr. Ackland sends to the *British Medical Journal* a description of a new form of apparatus for fractures of the horizontal portion of the jaw. It consists of a plated metal horse-shoe-shaped piece which rests upon the teeth, and a similar one which is applied below the chin. These are fastened together by two moveable clamps. The first is lined with ordinary splint gutta percha, which is warmed and driven down on the teeth and gums. The chin plate, lined with two layers of wash-leather is put into position and held there. The swivel clamps are then fitted on to both plates, and by a thumb-screw to each can be made to clamp both the plates together until the requisite tension is attained. It is claimed that this splint can easily be kept clean, that no bandages are required and that mouth washes can be applied over and over again in different cases without alteration or renewal.

DENTISTS AND APPRENTICES.—Not long ago an action was brought in the Halifax County Court against a dentist to recover £50 damages for a breach of indenture of apprenticeship. The evidence was to the effect that after the plaintiff's son had been with the defendant about a year the latter sent him home. For the defence it was contended that the lad showed no aptitude, and that on this ground the defendant was justified in what he did. Finally, judgment was given for defendant.—Quite recently another case was tried in the Sheffield County Court. The apprentice claimed £2 as damages and a cancelling of his indentures on the ground that he was not receiving the instruction in his profession to which he thought he was entitled. The case appears to have been brought under the Employers and Workmen Act, 1875, but the Judge was of opinion that he had no jurisdiction in such a case. After discussion, the case was withdrawn, no costs being allowed on condition that no further proceedings are taken.

INDIA-RUBBER.—According to the last official report two-thirds of the State revenue of Para are derived from the export duty on india-rubber which contributes twenty-five per cent. of its value. This high rate of duty may be maintained for many years, as Para has almost a monopoly. An interesting statement has recently been made by Professor TILDEN, who has found that a solid which formed spontaneously in a bottle of isoprene is a pure india-rubber. He had previously shown that oil of turpentine contains isoprene which when brought into contact with strong acids changes into a tough elastic solid. The artificial rubber unites with sulphur in the same way as ordinary rubber, and, like it, appears to consist of two substances, one of which is more soluble in benzine or carbon bisulphide than the other. On evaporation of a solution in benzine a residue is left similar to that obtained from Para rubber.

TUBERCULAR AFFECTION OF THE ALVEOLUS.—DONTRELEPONT has reported an interesting case in a German periodical. A patient, aged twenty-one, had an upper molar extracted. The wound did not heal, but became swollen. Later on, small splinters of bone were exfoliated, and the swelling gradually increased. The two contiguous teeth had been extracted not long before, and the whole gap left by the three removed teeth was soon a great swelling, with irregular, undermined edges and discharged a thin purulent secretion. The base showed, here and there, fungus granulations, between which were scattered miliary nodules. Gradually the infiltration spread over the whole alveolar process of the right upper jaw, and also attacked the buccal mucous membrane. The apex of the left lung was affected, and probably the wound had become infected through the sputum.

DEATH DURING CHLOROFORM INHALATION.—An inquest was recently held as to the death of a boy aged nine years who had been under treatment at King's College Hospital for necrosis of the jaw. Chloroform was administered by the "open" method, but after a few inspirations had been taken, and whilst still conscious, the boy vomited and struggled violently. He sat up with an expression of intense horror on his face, and on being placed back on the couch, his spine became arched and the heart ceased to beat. The respirations continued for at least five minutes afterwards, but, in spite of all efforts, the heart gave no sign of renewed action. Dr. Hamilton, who made a post-mortem examination, was of opinion that death was due to syncope and that the chloroform did not accelerate it, as the process of administration had hardly commenced. The jury returned a verdict of "Death from syncope through fright."

AN EXPLOSIVE POWDER.—Chlorate of Potash and Tannin are favourite drugs with many dental practitioners. We may therefore draw attention to a letter written to the *Chemist and Druggist*, in which the correspondent warned others of the danger which he himself encountered. A dentist ordered two drachms of Chlorate of potash and one drachm of tannin, and when these were mixed together in a mortar there was an explosion.

IMITATION OF GOLD. One of the most perfect forms is obtained by the following process :—100 parts by weight are taken of pure copper, 14 parts of tin or zinc, 6 of magnesia, 58 of sal ammoniac, 18 of quicklime, and 9 of cream of tartar. The copper is melted, and to this are successively and gradually added the magnesia, sal ammoniac, quicklime, and cream of tartar, each by itself, in the form of powder; the whole is stirred for half an hour, the zinc or tin being added in small pieces, and stirring is resumed and continued till the whole is melted, the crucible being then covered and the mixture kept in a molten condition for the period of 35 minutes. After this the dross is carefully and entirely removed, and the metal is poured into moulds. The substance thus produced has a fine grain, is malleable, and does not easily tarnish.

Abstracts of British & Foreign Journals.

POST-MORTEM TREATMENT OF THE DENTAL PULP.

By Otto Arnold, D.D.S.

A case presents for your consideration, in which is involved an exposed tooth pulp. For reasons satisfactory to yourself, devitalization of the pulp is agreed upon. Believing in arsenious acid as a devitalizing agent, you proceed to apply it, observing the usual precautions throughout your manipulations, dismissing your patient for two, six or twenty-four hours, as in your judgment seems best. At the appointed time the cavity is unsealed and results are investigated. You discover no sensation in the pulp, and thus far are satisfied; accordingly, as anatomical relations are favourable or not, you conclude to extirpate the pulp at once or defer the operation for a more convenient season. After the pulp has been extirpated, you fill the canal with a suitable substance, either at once or later, using your judgment to the best interests of the case in hand. There is nothing chimericalor speculative about the process, from beginning to end. It is the outcome of years of progressive experiment and clinical experience, and is accepted as a rational and conservative method wherever modern dentistry is known. It seems nothing short of assumption for any one to defend a system that has so thoroughly stood the test of time and given such beneficial results.

But we are now confronted with a proposition in practice, or a method, that is directly opposed to the principles of surgical science, which omits what we believe to be the most essential feature, viz: the removal of the dead pulp.

We know, from abundant evidence, clinically—most of us, at least,—that a dental pulp subjected to arsenic is not rendered immune against septic and bacterial influence. If arsenic established immunity, there would have been no occasion to change the method practised, more than fifty years ago, by Dr. Spooner and his confreres, who first employed arsenic for destroying tooth pulps, immediately follow-by filling, without removing the pulp, and ately, all substances by any of the then nd this was before the advent of the dental pericemental disturbances and alveolar abs- ly appeared in most cases so treated, and e followed sooner or later, it finally dawned nen that the post-mortem disposition of the rtant factor, and proved beyond all doubt normal state it existed in perfect content- it made things very uncomfortable, unless ies and a foreign burial place were pro- es thus treated remained comfortable for a rhaps others continued so throughout the lual. But extraordinary conditions do not exceptions. We can not lose sight of the herent in living tissues, and their power of resting destructive tissue metamorphosis. ncystment and absorption are well-known ing the only safeguards against rapid and legeneration. Most of us, perhaps, are xplainable conditions at times, but these as exceptions, and they furnish no reliable actice.

, when pulp capping was more extensively v, the most unpromising cases sometimes ment and seemed to prosper indefinitely ; perhaps the pulps were later discovered e usual evidences of the true condition were cause nature kindly tolerated the abnormal not the rule.

from accidental causes in perfectly sound long time inert as it were, but ultimately , and must be removed for the benefit of . We surely believe that a pulp within a re thoroughly protected from septic infec- exposed, and covered by a filling, no matter t had been inserted. Air-tight fillings, of , do not render a dead pulp immune from It must be removed ; and just in propor- oughly or partially done you induce the condition that will generate trouble sooner

e no definite rule governing the interreg- death of the pulp and the period when this fact is made manifest by subjective or objective symptoms, or both. Indeed, the prolonged immunity from discomfort that is sometimes experienced after the immediate or local disturbance following violence has subsided, likewise the immunity sometimes following pulp capping, furnish the only basis of hope for advocates of the Herbst or similar methods. This variation in the course of time is due to systemic conditions, depending upon the inherent power of resistance or the *vis vitæ*. But more often symptoms of pulp dissolution rapidly appear, and prompt surgical interference is demanded to arrest the evil.

Decomposition of unsterilized dead tissue is an inevitable consequence, whether it be of a part or the whole of the body. The same may be modified in character, however, by the influence of specific bacteria.

Pathologists have, for a long time, recognized the presence in blood-vessels of cadavers, of a gas which did not seem attributable to the ordinary post-mortem decomposition. This has given rise to much speculative theorising in the past, and has recently led to the discovery of a micro-organism that seems destined to clear the mystery.

This micro-organism—"Bacillus aerogenes capsulatus," so-called,—was discovered and cultivated in the pathological laboratory of John Hopkins University and Hospital.

The author states some of the principals considered important in the treatment of devitalized pulps.

The first condition is cleanliness within the cavity made by decay, and about the instruments used. The next step is to secure access to the canals, even at the expense of good tooth structure. Manipulative ability is always impaired by the obstruction of light and approach. Access obtained, proceed to introduce into the canal a barbed broach which has been sterilized by dipping it in creosote, passing it along between the wall of the canal and the pulp tissue. When the apex has been reached, gently rotate the broach until the sense of touch indicates to your mind that the tissue has become entangled upon the instrument, then gently withdraw it with the pulp adherent.

In all reasonably straight roots with symmetrical canals, wherein the pulp tissue has not reached an advanced state of disintegration or putrefaction, this will usually accomplish a complete removal of the pulp.

In posterior teeth, and particularly in the anterior canals of inferior molars, Donaldson's adjustable broach holder is a valuable aid. In all difficult cases there is no better aid to your manipulations than an inexhaustible supply of patience, accompanied by a determination to succeed in the undertaking.

When, however, all has been done, and your manipulative resources have become exhausted, with failure to entirely extricate the pulp, you may resort to some of the pepsin preparations, packing the canal full, frequently changing the same, which in time may digest the dead tissue left in the canal.

Or, as a last resort, leave the canal alone, filling the crown cavity with an easily removable temporary stopping and await developments. When pericemental inflammation or symptoms of the same appear, the canal may be reopened, treated antiseptically, and subsequently closed permanently. Taking it for granted, however, that in the multiple-rooted teeth all canals had been previously filled from which the pulps were removed.

The Dental Register.

SULPHUR NOT AN ELEMENT.

Dr. Gross of Berlin, is well known, amongst other reasons, for his exhaustive researches on sulphur, which have been in progress for many years. He has recently examined the decomposition of this substance electrolytically, and the results were communicated at a meeting of the Berlin Physical Society. The sulphates of barium and strontium were fused in a silver crucible, which formed one electrode, whilst a strong current of electricity was sent through the molten mass by means of a platinum wire electrode standing in it. After the electrolysis had proceeded for a definite time, analytical examinations of the results were made. It was found that the barium had combined with the platinum, forming a hitherto unknown compound, and at the same time about fifty per cent. of the sulphur had disappeared, its place being taken by about 40 per cent. of another entirely new compound. Dr. Gross considers that these results prove that sulphur is not an element but a compound of this new substance with hydrogen. If this view turn out to be correct and is able to pass unchallenged, we shall be prepared for anything almost in the way of an upsetting of theories in chemistry. Several of our scientists have expressed their suspicion that many of the elements might turn out to be really complex in character. We shall await with interest the reception of this extraordinary result in physical chemistry. If it be substantiated, it will add one more honour to the long list of discoveries attained by means of the electrolysis.

Electrical Review.

ARRESTS OF DEVELOPMENT AND DECALCIFICATION OF THE ENAMEL AND DENTINE.

By EUGENE S. TALBOT, M.D. Chicago.

I wish to call your attention to a few observations which I have made in regard to a want of calcification and decalcification of the enamel and dentine. The conclusions arrived at are the result of the study of three cases which have presented themselves to me for treatment.

Such conditions are frequently observed in connection with one or two or even three and four teeth. I can recall a number of cases where the lower central and the lateral incisors of both sets are in the same condition, while all the other teeth are normal. I can also recall a case where the bicuspids upon both sides are in the same condition and the other teeth are normal; and also other cases where the first molars upon both sides are in the same condition and also the roots of the second lower right molar, although I am not quite certain of this; the other teeth are normal. I have frequently seen and you have all observed the first permanent molars in that soft condition, contracted at different points, presenting holes and grooves which run in all directions. The decay extends deeply and is of a dark brown colour resembling spunk or the decay of the heart of a tree; the tooth is exceedingly sensitive to touch and painful when food of different qualities comes in contact with it. The secretions of the mouth ar usually perverted, and when these teeth are excavated, the softness of the enamel and dentine is readily noticed. The pulp recedes frequently, obliterating the pulp chamber.

The roots of the case illustrated by Dr. Barrett, seem to be covered at the cervical margin with dentine, which would also indicate that the pulp had also receded. I have observed this in the roots of molars, bicuspids and incisors when in a similar condition.

When this condition takes place in old people the enamel and dentine become exceedingly hard, and no sensation is experienced when the tooth is excavated. You will therefore observe that while the recession of the pulp is precisely the same in both cases the results are directly opposite. We have all observed teeth of a dark colour, and so worn down that occlusion is impossible, while the teeth anterior and posterior to them, are in a healthy condition—that is frequently the case with the first permanent molar.

Their surfaces are smooth and polished. The colour of the crowns of these teeth are not unlike that of the roots and teeth already illustrated in the cases presented.

I should class under the head of abrasion and erosion cases where one, two or even all the teeth are affected and where the colour of the enamel and dentine is normal. Many theories have been advanced of the etiology of abrasion and erosion, but I think that all these cases can to a certain extent be classed under the same condition, namely, primarily a want of calcification and a decalcification of the enamel and dentine. We frequently find that the first permanent molar and sometimes the second and third are worn away, and all the other teeth are normal. These mouths sometimes present strange conditions. First, decay is rarely present. The secretion of the mouth is most always alkaline, and quantities of tartar are usually present. In ordinary mouths when the secretions are acid decay would take place because of the recession of the pulps—usually tartar in large quantities is present. These conditions render decay almost impossible. These teeth are always soft, cut readily under the bur and the pulps recede so that in many cases the pulp chamber is entirely filled. The anterior teeth upon the upper and lower jaw will wear away frequently leaving a space of from one-fourth to three-fourths of an inch between them, while the teeth posterior to them occlude. The enamel although nearly twice as dense as the dentine wears away as readily as the dentine. What conclusion can we draw from these facts? We have already shown that in some cases the phosphates and carbonates are not assimilated. This to my mind is the cause of erosion and abrasion. We instinctively make the remark to a patient that it is better for teeth to erupt late because the tooth structure will be of a better quality. I have frequently observed this in irregularities of the teeth—When these teeth are slow in coming through, they are larger, more dense in structure and set more deeply in the jaw. The reverse is the case when they erupt early. The structure of the tooth is not well nourished. This condition can also occur in utero, the mother not giving sufficient nourishment to her child. Dr. Marshall in his paper entitled "The Oral Cavity of Pregnant Women," read at Newport, 1889, alludes to "certain cases of pregnancy in which the nutrition was impaired and as a result the bones and dentine became abnormally soft, and that thus this softening of the dentine predisposes the teeth to decay." The child after birth may be poorly nourished and thus the bone, teeth as well as other tissues of the body suffer as a result. You are all familiar with the fact that the teeth suffer from a want of nourishment, and arrest of development will take place when the child is afflicted with the constitutional diseases. The teeth are soft and when the enamel is lost decay attacks them. After the teeth are formed they frequently decalcify. This is well illustrated in the case of pregnant women—the teeth seem to lose their vitality and decay early. If the teeth disintegrate under these conditions why will they not in constitutional diseases, as consumption, typhoid fever, etc.? We know that this is the case so far as decay is concerned. I have called your attention to the fact that in some cases, especially in children between 12 and 20 the phosphates and carbonates do not assimilate, and hence there is a softening of the teeth and bones. We find that these substances which are taken in the system in the form of food for the nourishment of the body are deposited, unorganized upon the teeth, being excreted by the salivary glands. These substances are also excreted by the kidneys. The brain is not properly nourished, and as a result the child becomes very nervous, or again the child may possess a very active brain and the phosphates are entirely used up in its nourishment, the bones and teeth suffering in consequence. I have plenty of material that could be brought forward to sustain this theory, but the paper is now so long that I will not weary you with any further data. I have tried to find some mode of treatment, but at the present time have been unable to lay down any fixed rule. Plenty of outdoor exercise and good nutritious food are about all the measures that can be suggested. It is possible that if the child lives long enough he may outgrow this want of assimilation. *The Dental Register.*

MECHANICS IN DENTISTRY.

By W. G. A. Bonwill, D.D.S.

The mechanical dentist is a fixture in our profession, and it would be well to make yourselves competent to be experts in your art. The electrician could not do his work without the steam engine to drive his dynamo. The field of mechanical dentistry to-day is unique ; and, while we have no system that has been universally adopted, we have done enough to place us as far on the record of progressive dentistry as has the so-called operative department.

While I am no friend to bridge-work as practised, yet it has taught a few men what we so much stand in need of—manipulative skill. Crowning has been one of the greatest steps in dentistry so far as pure artificial and mechanical work is concerned ; but even this you will find has been most woefully abused by many of our craft, in cutting off the crowns of natural teeth that could have been saved with amalgam for years. The truly competent dentist who is a born mechanician will seldom have to resort to a crown of any kind. The more we look at the subject will we find that dentistry is a medley, and no man can be competent to practise it who has not been educated in all its departments to do one as well as another.

What is it that will place us among the world's exemplars, and give to us, when dead, a place worthy to be remembered ? One man from our ranks has been honoured by a public monument, the discoverer of anæsthesia ; and if it had been raised while he lived, I am not sure but he would have been abused that he did not give at once his discovery.

The first step to recognition by the public will be when we have, as I have intimated, sought truth for its own sake. Selfishness, envy, jealousy, and ingratitude can have no place in a body of men who labour for the general good.

Western Dental Journal.

Reports of Societies.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual Monthly Meeting of the Manchester Odontological Society took place at the Grand Hotel, Aytoun Street, on Tuesday evening, the 17th February. Mr. P. Headridge, President, in the chair.

CASUAL COMMUNICATIONS.

Mr. Whittaker showed a model of a case of Epulis between the right lower bicuspid and adjoining molar, in a patient, sixteen years of age. Twice previously the epulis had been removed, but had quickly recurred. In his treatment of the case he had removed the epulis, and extracted the bicuspid tooth, and in addition had cut away the alveolar border round the anterior fang of the molar, with the dental engine. Six months had elapsed since the operation, and there was no appearance of the growth. Mr. Collett recommended the trial of ethylate of sodium in similar cases of small growths, and in cases especially of spongy gums, and polypi.

Mr. Houghton then read his paper which we publish on page 348.

DISCUSSION.

Mr. **COLLETT** said he had one question of practical importance to ask, namely, how Mr. Houghton ascertained the exact depth to be left in continuous lowers, and was it possible to grind the case down if it had been left too deep.

Mr. **JONES** said he would be very pleased to bear his testimony to the pleasure he had felt in listening to the paper. He believed the system advocated by Mr. Houghton would take a very high rank in time. There were, no doubt, many difficulties connected with the work, but these seemed in a fair way of disappearing, owing to the interesting labours and experiments of Mr. Houghton and others.

Mr. **SIMMS** said he hoped the methods shown by Mr. Houghton, would lead some of the members to follow his example. There was a large amount of interest being taken in the profession in such work now. He considered the specimens with Rose's compound shown by Mr. Houghton better than any he had seen. He himself had obtained excellent results by using Ash's body, although the melting point was higher than that of Rose's. The members would see that in one of his specimens, which had been sent round, an attempt had been made to use tube teeth. There were some objections to their use. In the first place, the teeth melted at only a little higher temperature than the body, and so they ran the risk of destroying the colour of the teeth. Another objection was the small number of shapes they had to choose from. In England, they had only Ash's, Lemale's and Massey's. The latter were not made in sufficient variety, while Lemale's melted at too low a temperature. Ash's teeth were not shapely enough for work of that kind. But if they could get tube teeth of American or a similar body, then there would be a great future for teeth of that description. He, however, believed they had not yet attained the ideal system of gum work. What they had to do was to strive to do away with the platinum base, because it made the plate so heavy. They were, however, advancing, thanks to the efforts of gentlemen like Mr. Houghton, who spent their time elucidating the many problems which surrounded the successful working of continuous gum work. One of the greatest difficulties formerly was "crasing." That, however, had now disappeared, owing to their greater experience. For the work Mr. Houghton had done in that direction and for the excellent paper given, they, as a Society, were deeply indebted.

The President said Mr. Houghton appeared to have solved the difficult problems of preventing the shrinkage of the model, and also the fusing of the teeth. He had also thrown out an excellent idea respecting the man who made a set of teeth for a guinea. What they, as a profession, had to do was to raise the status of the profession to such a pitch that such men would never have a chance of getting in. They could only do that by making their work more scientific, and accordingly more difficult for such men. He himself thought that with the exception of Ash's enamel, the American enamel body was the best. It certainly required greater heat. He quite appreciated Mr. Houghton's difficulty as to the exact regulation of the heat inside the furnace, but he thought an automatic arrangement could be devised which would overcome the obstacle. The great point they had to guard against was allowing the model to remain a moment longer than was necessary in the furnace. If they did so they might cause the enamel to glaze too much, or the body to contract, or the teeth to become displaced. Lemale's teeth, he presumed, were similar to Ash's teeth, but they both seemed to become white after being in the furnace. He preferred Massey's teeth for his own part, as they stood better than many others in some experiments to which he subjected them. A slight coating of silex on the surface was, he found, useful in preventing them from fusing too readily. In regard to the use of platinum, it was very doubtful whether they had a body strong enough to resist the pressure to which the plates were put, without its use. In conclusion he begged to thank Mr. Houghton for his most admirable paper.

In answering the questions which had been put, Mr. Houghton said, in reference to Mr. Collett's question, that if the body of the lower denture was properly made, it would stand grinding down exactly as they would a vulcanite plate. The reason of the good colour of the specimens of Rose's mineral was, he thought because he had given them a higher temperature than usual. The continuous gum work was not so expensive as some seemed to think, and was quite within the capacity of the intelligent workman.

A hearty vote of thanks to Mr. Houghton for his paper, brought the proceedings to a close.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

General Meeting, February 28th, 1893. The President, Mr. P. A. Linnell, in the chair.

The minutes of the previous meeting were duly read and confirmed.

Mr. Tanner proposed that Dr. Stallard and Mr. Wilson, the two anæsthetists to this hospital, be elected honorary members of the Society.

Mr. A. L. Bostock seconded this motion, which was afterwards carried unanimously.

CASUAL COMMUNICATIONS.

Mr. A. B. **SIBSON** shewed the following:—

(*a*) Fine specimen of exostosis in an upper molar.

(*b*) Specimen of gemination of two lower temporary teeth.

Mr. J. A. **LEES** exhibited a cast of a mouth, where two temporary, and two permanent lower canines were *in situ*.

Mr. G. **KERSHAW** presented two upper canines with double roots, and an upper temporary molar with four roots.

Mr. J. C. **LINGFORD** passed round an iodoform dressing, which had been in a root for four years, and was in a perfectly sweet condition.

Mr. **MINSHULL** shewed a cast of an upper jaw with a dilacerated central in position.

Mr. A. L. **BOSTOCK** presented a sketch book, with interchangeable leaves, to the Society, and suggested that each student should make at least one sketch in it. He thought that if this idea was carried out, the book would be of great benefit to those who should eventually succeed them as students. As an incentive to others. he had executed a sketch of development of teeth.

The following questions from the question box were read and discussed:—

(1) How should osteo fillings be finished?

Mr. J. A. **LEES** in opening the debate, said that the subject was more or less a matter of opinion. He found that disking the fillings, and then afterwards burnishing them, produced the best results.

Mr. D. **HEADRIDGE** thought that disking the fillings was not productive of such satisfactory results as burnishing them. He said that by burnishing, the phosphoric acid was worked to the surface, thus giving a dense and homogeneous filling.

Mr. P. A. **LINNELL** said that the quality and durability of the fillings would be greatly enhanced by a combination of both methods. He recommended Lava strips as being very useful, when filling teeth nearly in contact with each other.

2. Why do we fill root canals?

Mr. F. L. **TANNER** said the question was more easily asked than answered. He himself did not see any reason why root canals should be carefully filled, and the apex sealed, although in practice he always did so. He mentioned that old practitioners in years gone by, simply inserted cotton wool saturated with carbolic into the canals. He understood the reason to be, that supposing the filling should decay, no bad results were probable if the canal was filled.

Mr. A. L. **Bostock** suggested that the sealing of the pulp canals would preclude the possibility of pus from the abscess sac of a neighbouring tooth lodging there.

The President then called upon Mr. Arthur B. Sibson for his paper on "Antral Disease" which we publish at page 337.

Mr. P. A. **Linnell** in opening the discussion, congratulated Mr. Sibson on the value of his paper, which he thought had been presented in a most interesting manner. He hoped the gentlemen present would show their appreciation of it, by entering into its discussion.

Mr. D. **Headridge** referred to the excellent consideration which Mr. Sibson had given his paper. There was a certain observation he desired to point out with reference to the causation of empyema of the antrum. Most people regarded it as pre-eminently associated with disease of the teeth. Some German statistics gave it that "93 per cent. of the total number of cases were due to intranasal polypii," &c. This' however, was only a medical opinion, and was rather doubtful. As regards the diagnosis of diseases of the antrum, it was often important to be certain, whether the contents of the diseased antrum or antra were liquid or solid. However, it is to be noted, that a fluid distends the antrum in the direction of its weakest bony wall, such as the orbital fossa, the outer, and infra palatine plate. Solids, however, enlarged the cavity equally in all directions. In treating these cases, he had used iodoform gauze to pack the antrum, with success; but it was very disagreeable to the patient. Mr. Jordan, a French surgeon, had used perchloride of mercury, with good results.

Mr. F. L. **Tanner**, thought that the treatment of these cases should be confined to the dentist, as his larger mechanical experience was more often required than that of the surgeon. He related a case of a patient of the hospital presenting herself with antral disease. An attempt was made to open into the right antrum, through the sockets of the six-year molar, but, however, no opening could be found. The twelve-year molar was then tried, and finally the canine fossa was perforated, but strange to say, no antrum could be discovered. He considered that the natural opening into the nose was often obliterated. To syringe out the antrum, the patient should be instructed to fill his mouth with water, and force it through the opening into the antrum with the cheeks, nasal breathing being normal. To treat these cases, he used phenate of soda in preference to iodoform, which was so nauseous to most patients.

Mr. A. L. **Bostock** complimented Mr. Sibson on his concise paper, and especially on the way he had arranged the different parts. He thought that the absence or presence of pain of a neuralgic character, was dependent on whether pressure was occasioned, by the inflammation present, upon the posterior dental nerve trunk, passing through the antrum. In regard to the objection of using iodoform as a dressing, on account of its smell, this was now overcome by substituting Iodol, which was identical to it, both in its chemical composition and therapeutic action.

Mr. J. C. **Lingford** regarded the electrical examination of the antrum, in suspected cases of disease, as a distinct advance in surgical science. He suggested that Mr. Sibson might give a demonstration on this point before the Students' Society on some future occasion.

Mr. **Sibson**, in answering the various points raised in the discussion, pointed out that, although there were some medical authorities who contended that Dental disease alone was not the most frequent cause of Empyema, yet they were in the minority. He had noticed last year, that two Edinburgh physicians in writing to the *Lancet* supported Mr. Sewill in his statement, that "in almost every instance, the cause of the malady arose from dental trouble." To these an objection was made by a London physician, who stated that out of forty cases, only a very few were unassociated with intranasal polypus, &c. Dental evidence went to prove that Mr. Sewill's view was more than probable; that it was even correct. Mr. Headridge and the President had referred to the importance attached to the differentiation, between an antrum, the contents of which might be fluid or solid. He himself believed that not only the weaker, but all the walls of the cavity might be distended, even by a fluid; thus making diagnosis rather difficult.

Mr. Tanner had mentioned the difficulty presented by obliteration of the nasal orifice by inspissated pus. This could be overcome, by making the opening into the antrum sufficiently large for the entrance of the nozzle of a syringe; the force of the warm water directed against the closed orifice would be in almost every case successful in forcing a way through the natural opening into the nose. In conclusion, Mr. Sibson expressed his thanks for the appreciation they had shown his paper.

Mr. D. **Headridge** then announced the subjects of the microscopic demonstration, (Human dental histology) which were on view for the evening. A vote of thanks was given to Mr. Hooton and others who had furnished the sections.

This terminated the proceedings.

Dental News.

THE DENTAL PROFESSION IN SPAIN.

A meeting of dentists was recently held in Madrid, for the purpose of taking steps to represent to the Spanish Minister of Education the necessity of reform in dental education. Resolutions were passed that dental students should be educated in the medical faculties of universities, and that dentists should be accorded by law academic rank and all the rights and privileges which the dental profession, by reason of its importance, may justly claim. It is also suggested that the illegal practise of dentistry should be prevented, "a point," it is added, "at present much neglected by the proper authorities."

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
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urnal of Dental Science.

ON, MAY 1, 1893. Vol. XXXVI.

L CONDITIONS OF THE DENTAL PULP.*

RGE W. WATSON, L.D.S. Edin.

nd Gentlemen,—Before saying anything
ical conditions of the pulp, allow me to say
gard to the histology of this organ. The
central portion of the crown of the tooth
l or canals, terminating at the apical fora-
y endowed with nerves and blood vessels,
a loops, forming a fine plexus and network
f the pulp. The pulp matrix is semi-gela-
kly covered with cells (odontoblast), con-
l and round cells. Those cells, both in the
ortion,are more numerous at the periphery,
lie without arrangement in relation to each
al portion of the pulp, in the root portion the
ells is parallel with the direction of the pulp
omical relations of the pulp, and the fact
in a rigid cavity, render it very susceptible
nditions when irritated or inflamed, and I
whether it ever assumes a healthy condition
ack of acute inflammation.

onditions of this organ might be classified
of Pulp ; (2) Acute Pulpitis ; (3) Chronic

---

ore the Odontological Society of Great Britain.

Pulpitis ; (4) Abscess of Pulp ; (5) Hypertrophy, Atrophy, and Degeneration : (6) Secondary hard Formations.

(1) Irritation of the pulp is usually consequent on some slight injury to the enamel or subjacent dentine, either by caries, abrasion, or erosion ; or the conduction of thermal changes through a metallic filling, and hypersensitive dentine. This sensitiveness to changes of temperature, it must be remembered, is one of the normal functions of the pulp. In such cases the irritation is conveyed to the pulp by means of the dentinal fibrils, as a result of which there is produced a certain amount of hyperæmia, or determination of blood to the part opposite the lesion ; this hyperæmia may only cause a slight distension of the blood vessels, or result in extensive aneurismal dilatation of the vessels, without, however, any alteration of the tissue elements of the pulp. If the condition persists, or happens frequently, the vessels fail to contract owing to partial paralysis of their vaso-motor nerves, and a permanent distension of their walls results, ending in exudation of their contents, and the production of acute inflammation. If, on the other hand, the irritation is removed, the pulp assumes its normal condition again. The pain caused by irritation of the pulp with hyperæmia is sharp, intermittent, and paroxysmal in its character, its location being commonly in the neighbourhood of the ear. The patient frequently has difficulty in locating the pain, or refers it to the wrong tooth. In all cases of irritation of the pulp which I have examined, there have been present small nodules of secondary dentine, which may have something to do with the neuralgic pain associated with this condition. Pulp irritation and hyperæmia may be in certain cases a resultant of pulp exposure, but in such cases the pulp speedily becomes acutely inflamed and eventuates in suppuration of the organ.

(2) Acute pulpitis is pretty common as a sequence of long

n, but is much more frequent as a result of
n caries, &c.

the inflammation is limited in extent, only
pulp being implicated ; on examination of
ll be found in the neighbourhood of the
nt red colour, shading off from the periphery
blood vessels are numerous and distended
rve bundles and connective tissue cells in
focus of inflammation present evidences of
s, while a molecular cloudiness may be
e presence of numerous fat granules. As
s, the normal elements of the pulp become
replaced by inflammatory exudates and fat
nded blood vessels, especially at the apex
are liable to be strangulated, resulting in
rgan ; thrombosis of the main vessel may
n of necrosis.

of acute pulpitis may be suppuration,
ation cells and tissue elements of the pulp
vely and become converted into pus cells,
hich condition there is usually fatty meta-
a curious fact that the odontoblast cells in
sist to the last, and are only destroyed when
es. In some cases of very acute pulpitis
he colouring matter of the blood is forced
of the dentine, producing a red staining.
ometimes seen as a sequence of the applica-
the pulp, when acutely inflamed. My old
oot, first drew my attention to this fact many
hich time I have come across, and possess,

pulpitis, as a result of exposure, is met with
than the acute, and is very often overlooked
owing to the comparative immunity from

pain associated with it. This form of disease is less amenable to treatment than even the acute. The pulp at point of exposure, and for a slight depth beyond the surface, is highly vascular and red, and from the surface is given off a serous or purulent fluid of a disagreeable phosphatic odour ; beyond the inflamed portion the pulp will be seen to be quite normal in its character. In the neighbourhood of the inflamed part the odontoblast cells will be found atrophied and rapidly disappearing as the ulcerative process extends. Inflammatory degeneration ensues, and gradually reduces it to a greyish yellow shrivelled mass, or, under favourable conditions, the chronic form may take on acute disease, ending in suppuration or gangrene. It is very probable that micro-organisms have something to do with the ulceration incident to chronic pulpitis, but this is a subject which requires careful investigation before anything definite can be said.

(4) Abscess of pulp has already been mentioned as a sequence of acute inflammation. Its occurrence is usually coincident with exposure of the pulp to the fluids of the mouth, which, it must be remembered, nearly always contains pyogenic organisms. It may commence, as in chronic pulpitis, in a pus-secreting inflammation, and gradually invades the deep tissues of the pulp, having a tendency to penetrate the pulp in the direction of the main blood vessels.

In the neighbourhood of the focus of suppuration the blood vessels will be found dilated into ampulæ ; the odontoblast cells are gradually undermined and destroyed, while the nerves become indistinct, and speedily disappear. This destructive process may go on till the whole of the pulp becomes gangrenous, or suppuration may stop short and fatty degeneration ensue.

Dr. A. C. Hugenschmidt, of Paris, has recently drawn attention to a form of abscess of the pulp which he calls partial suppurating pulpitis, which is always associated with

abscess. The tooth may not be carious, or
xtent, is darker in colour than the normal
of it, and there is a persistent alveolar
apex of the root. If the pulp chamber of
opened into, the organ will be found fully
g to Dr. Hugenschmidt, such pulps have on
root surfaces a small ulcer which secretes
vels along the external portion of pulp, and
l foramen—usually in these cases very large
ay to the surface like an ordinary alveolar
l many years ago I had just such a case,
e very much. A lady called on me with a
ured central incisor free from caries, and
harge over the apex of the root. I immedi-
rill into the pulp at the back of the tooth,
astonishment that as I got further in, the
re and more sensitive, and I had to apply
troy it; unfortunately the pulp was not
its removal. Several authors mention the
alised abscesses being found in the substance
no one, so far as I am aware, except Dr.
has called attention to the peculiarity of this
associated with the presence of a live pulp.

rophy of the pulp, as a result of chronic
posure, is of common occurrence. It consists
e hypertrophic growth of the pulp which
the opening into the pulp chamber, prolifera-
up the carious cavity with a red fleshy mass.
ich growth has usually been attributed to the
t of the saliva, but I am more inclined to
products of the numerous micro-organisms
cases, and also combined with the saliva, have
h it. There is an entire absence of nerves,
atrophy; and according to Salter, the blood

vessels are enormously dilated into ampulæ. I have been unfortunate in not being able to make this out in the four or five hypertrophied pulps sectioned. A hypertrophied pulp differs entirely in its histological structure from the normal pulp, being principally made up of multi-nucleated oval or round cells, analogous to granulation cells, with a greater or less amount of interstitial fibrous tissue. The external surface of such growths is sometimes covered with squamous epithelium. Several authors—J. Tomes, Wedl, &c.—mention the fact that hypertrophied pulp sometimes becomes calcified.

I met with a case which I can only attribute to this origin some years ago. A boy of 14 had a M$\frac{}{1}$ having a pretty large carious crown cavity with an exposed and hypertrophied pulp; there was some difficulty in getting arsenious acid applied, owing to an obstruction. Next day I found there was a square block of hard tissue lying over the roof of the pulp chamber, but not filling the carious cavity quite up; the pulp had been exposed at one side and proliferating had filled up the space all round between the block of hard tissue and the cavity; the hard tissue I broke away with an excavator, and, had all the appearance of osseous tissue.

Degenerations of the pulp as a sequence of chronic inflammation, and as a result of senescence are not uncommon, and might be divided into fatty degeneration, areolation, fibroid, and calcareous degeneration.

Fatty metamorphosis, and other degenerative changes in the pulp generally take place as the result of sub-acute or chronic pulpitis, and are always an indication of diminished vital activity in the organ. A pulp thus affected is reduced in volume, somewhat opaque, and of a yellowish red or grey colour, and feels unctuous to the touch. As the process progresses the sheaths of the nerves, the coats of the blood vessels, and to a certain extent the parenchyma and cells of the pulp, all undergo fatty metamorphosis, and scattered through the whole of the organ are numerous fat globules, which obscure its ultimate structure when examined microscopically. This condition of fatty degeneration, which in a young patient might be a sequence of chronic pulpitis from pulp exposure, occurs in old people as a result of those degenerative changes accompanying senescence. Such pulps do not give rise to abscess or cause any trouble unless exposed to the fluids of the mouth for some time.

Areolation of the pulp seems to be a somewhat rare affection, and develops as a result of chronic inflammation. The pulp is found shrivelled up and is much reduced in size so as to resemble a thin membrane; it is smooth in appearance, and dark brown or reddish in colour. The cells and general histological appearances of the pulp are entirely changed, a reticulum of fine fibrous tissue is developed, and scattered through the mesh-work of fibres are numerous oval cavities which are supposed in life to contain fluid; the condition may only affect part, or the whole of the pulp.

Wedl mentions another pathological condition which seems to be somewhat analogous, namely, sclerosis. Tense cord-like bundles of connective tissue interlace and form sharp angles with each other, between the meshes of which here and there fat granules occur; as the pathological condition advances, the bundle of nerves and other normal elements of the pulp atrophy and shrivel up.

Fibroid degeneration of the pulp is found chiefly in the worn down teeth of elderly people, and occurs as a sequence of defective nutrition of the pulp; there is an abnormal production of fibrous tissue developed, no doubt from the connective tissue elements of the pulp, the tissue occurring in bundles, or as a network, while the nerves, cells, and blood vessels atrophy, and if the process is unhindered, the pulp shrivels up and becomes dead, or suppuration may attack and destroy it. Associated with this pathological condition tortuosity and distension of the vessels are usually present, tending to partial strangulation, and the formation of a lower type of tissue as a result of decreased nutrition. The various conditions mentioned in the degenerative changes incident to the pulp may in some cases be combined. Fatty metamorphosis may be combined with calcification, fibroid, or calcareous degeneration.

Calcareous degeneration is very frequently associated with fibroid or fatty degenerative conditions of the pulp, and must not be confounded with the ordinary calcified pulp nodules. It consists of deposits of calcareous salts in the connective and other tissues of the pulp, analogous to what obtains in other tissues and organs ot the body. The concretion is a sequence of inflammatory changes in the pulp, and is found in shape of irregular semi-transparent, oval, round or cylindrical masses, very often adhering to the blood vessels or trunks of nerves. They are rugose on the surface, and in this respect differ entirely from the nodular calcified masses found in the pulp, which are comparatively smooth. These calcareous masses dissolve in dilute acid with the evolution of, probably, CO_2 gas.

Their chemical composition is supposed to be principally phosphate and carbonate of lime. As a rule this form of calcareous concretion is more frequently found in the radical portion of the pulp than in the crown. Such pulps containing much of this deposit when dry, are extremely brittle, and are readily cut through in sectioning for microscopic investigation. The pathology of such deposits in the pulp is pretty evident. Lime salts are deposited from the inflammatory exudate and form granules which increase in size at each exacerbation of the disease, till they form the usual irregularly shaped concretions scattered through the tissues of the pulp. Accompanying this calcareous deposit there is usually tation and thinning of the walls of the ssels and atrophy of the nerves. It appears deposits have their origin in sub-acute ditions, the process eventually becoming racter.

al condition of the pulp I am convinced ates severe neuralgic pain; one case in e years ago a lady called on me who had some time from severe neuralgic pains. pre-molar, the pulp was not exposed, but yer of dentine over it. I attempted with-he it down; one day it would be all right, ght be as bad as ever, so the patient even-its removal. On examination of the pulp p substance of root numerous calcareous have no doubt, were the origin of the cause of the neuralgia.

ard formations in pulp cavity. It is still to whether these formations are entitled to thological or not; however, I think there dence that in most cases they are truly ondary formations might be classified into air. A new and somewhat regular growth nt to the pulp chamber and deposited n of the tooth, such as caries, abrasion, or tinal tumour or odontome. An irregular growing from the pulp chamber by a ped-primary dentine being continued into the . (3) Nodular calcification of the pulp. f calcified dentine, with very small and cattered through the tissues of the pulp. Irregular dentinal formations containing osseous tissue and dentinal tubules.

r was recognized and known more than 100 years ago, but only as a result of abrasion, and is interesting to us as exhibiting the *vis medicatrix naturæ* of such tissues as the tooth pulp. Dentine of repair is produced when, as a result of disease or injury, a portion of the protecting cap of enamel is removed, thereby exposing the underlying highly sensitive dentine to irritation. This impression is doubtless conveyed to the pulp by the dentinal fibrils exciting the odontoblast cells to renewed productivity and the development of compensatory tissue; in some cases, however, no secondary deposit takes place. The amount of this tissue deposited is proportional to the extent of the injury at any particular part, and registers its progress by distinct laminations. There is always a distinct line of demarcation between the primary and the secondary dentine, and on maceration the repair tissue frequently separates from the walls of the pulp chamber. We are in the habit of thinking that a deposit of secondary, or repair tissue is the best that can happen after capping an exposed pulp, but I am afraid it is just the beginning of the end, as the organ speedily succumbs under the influence of this deposit, and the pulp becomes necrosed.

Dentinal tumour or odontome.—This sort of growth is found less frequently than the other varieties, and varies very much in form, incidence and position. In some cases they grow from the roof or sides of the pulp chamber, or between the entrance to the roots in multiple-rooted teeth. They originate at a time when the walls of the pulp chamber are in process of calcification, the anatomical structure showing this, inasmuch as the tubules of the new tissue are in direct continuity with the primary dentine. The boundary layer is distinguished by the uniformity of the tubules extending from it, while the tubules of the new formation are very erratic in their course, and meet those of the primary tissue at an acute angle, and here and there at nearly right angles.

The usual form assumed by these growths is oval or round,

ciful specimen of a stalactitic form which
carious lower molar, the subject of very
ains, growing from the roof of pulp cham-
ogical condition may be found in perfectly
l as in those the subject of some lesion, and
e in the pulp chamber may not cause
t let the pulp become inflamed and a
natters will prevail. The pulp, when the
ation, expands like other tissues, and be-
these growths, originates very severe
tioned by various authors. I have come
cases, where, on examination afterwards,
found present, associated with very severe
the case of the stalactitic form already
ne of them.

oation.—Scattered nodules of dentine are
und present in the pulp; more particularly
en the tooth is the subject of abrasion,
At an early stage of the process dark out-
es, probably calcoglobulin, will be found
he substance of the pulp, by the multipli-
sence of which there is produced those
nodules. In size they vary much, in some
pic, in others filling up nearly the whole of
r root canal. In form they are flattened,
ed, conical, berry-like or warty. A good
odule presents to the naked eye a yellowish
tain degree of transparency, and a hard-
o that of dentine, having a rounded outline
odulated. They present no regularity in
structure, showing sometimes a concentric
others they are composed of irregular
ry tissue with very erratic and contorted
asionally exhibit the remains of vascular

canals. In some cases when the whole of the pulp is calcified we find small isolated and uncalcified portions of the pulp remaining, which are apt to prove troublesome, especially in roots, when attempting to devitalize. The presence of tubules in these growths does not necessarily mean that we must have odontoblast cells for their development.

In a large number of cases these cells are destroyed or atrophied, in which condition, I have no doubt, the connective tissue cells of the pulp generate both tubules and the calcified mass. Like other varieties of secondary formation, I am inclined to include nodular calcification as a pathological condition also, as it occurs in teeth nearly always affected by caries, abrasion, or erosion, and as a result of pathological conditions of the pulp, due to the above-mentioned lesions.

Osteo-dentine, as its name implies, is a form of secondary dentine, embracing the characteristics of both bone and dentine. It is found in the pulp lying loosely or attached to the walls of the pulp canal, in the shape of round or irregular nodules, and is developed from the connective tissue of the pulp. It usually contains blood vessels, round which there are sometimes formed a concentric arrangement of the tissues analogous to that of the Haversian system in bone, agreeing also with this tissue in the presence of lacunæ. Some authors classify pulp nodules under osteo-dentine, whether they contain osseous tissue or not in their structure. I think it better to apply the term, osteo-dentine, to tissues which exhibit all the characteristics of both bone and dentine. This form of secondary formation is somewhat rare, and I only obtained one good specimen out of 1,000 teeth examined while investigating this subject, some years ago.

A number of years ago I gave a paper before the Odonto-Chirurgical Society, on "Secondary Formations in the Pulp Cavity," and from the tabulated list drawn up at that time, the percentages in 1,000 teeth of the different varieties of secondary formations are tabulated; of course it is only a rough approximate. Out of 1,000 teeth examined, there were 768 carious, 135 were worn down by abrasion, forty-nine of which had no appearance of calcified changes in the pulp, the other eighty-six having it present to a greater or less extent; seven were grooved by erosion, four of them having repair tissue present, the other three had none; thirty-five were sound, or what would usually be termed sound, eighteen of which were unaffected by calcification, the seventeen having one or other of the varieties of secondary formation present, while of dentinal tumour there were seventeen. On enumerating those which had, and those which had no calcified tissue present, it was found that those without numbered 564, while those that had, numbered 432, the proportion, therefore, being 43·2 per cent. with calcification, and 56·4 without.

HÆMORRHAGE AND ITS TREATMENT.*

By J. A. Lees.

Mr. President and Gentlemen,—The scope of my paper to-night is much more limited than one might have been led to suppose on observing the title "Hæmorrhage" in our syllabus, it is my intention to confine myself to that form of hæmorrhage, which as regards treatment, falls within our province as dental surgeons,—namely hæmorrhage from the alveoli following the extraction of teeth. In most cases after the extraction of a tooth, the capillary oozing from the socket ceases within a few minutes; the socket is filled with blood clot, and the healing process is carried on by the formation of granulation tissue under the clot.

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* Read before the Students' Society, Victoria Dental Hospital.

Certain conditions however are antagonistic to this favourable sequence of events; bleeding may go on for hours, days, or weeks, or may cease only with the life of the patient. Of these conditions that known as hæmophilia, or the hæmorrhagic diathesis is the most formidable, and it behoves us to be on our guard, lest unknowingly we extract a tooth from any person suffering from this affection. It is characterised by the occurrence of hæmorrhage, very difficult to arrest, spontaneously, or on the slightest provocation; its cause is unknown; and though nearly always present in the male members of a family is transmitted through the female line. The pathology is obscure, and the most that can be said is that the disease depends on some alteration in the vessel walls; partial fatty degeneration of the internal coat of the capillaries has been observed, and it has been noted that they are not lined with normal healthy epithelium.

It is held by some that the skin presents a marked delicacy and transparency and the subcutaneous vessels are very superficial, while the larger arteries are narrower than normal and their walls thin and transparent.

It is not a blood disease; the blood itself clots as readily and as firmly as that of a healthy person.

The seriousness of this condition will be seen when it is reflected that many of the ordinary means of arresting hæmorrhage are contra-indicated in these bleeders; ligature of main vessels, the galvanic cautery, etc., only do harm by increasing the size of the wound, or making a fresh one.

A fatal example of alveolar hæmorrhage in which both these methods were adopted is on record. The hæmorrhagic diathesis in this patient manifested itself in childhood, and on one occasion, after the extraction of a tooth, bleeding lasted

ne .treatment of this fatal hæmorrhage the
uced a temporary arrest of bleeding; the
s afterwards tied by Sir B. Brodie; the
were not relieved and the wound in the
d another bleeding surface and hurried on
on. In another recorded case, where the
the lip was accidentally burnt, and the sur-
d soon commenced bleeding profusely and
till the fatal termination.

rity of bleeders are cut off before arriving
rty years; but as the patient grows older
y to bleed decrease; therefore, the younger
re cautious must we be if we have reason
ence of hæmophiba, hæmorrhage following
ions as vaccination, lancing of gums, etc.,
sions proved fatal.

re are conditions in which the hæmorrhagic
on an abnormal state of the blood, sea
ra are the most striking examples, and a
g power in the blood is a characteristic
fections.

Tomes' Dental Surgery, but according to
hæmorrhage in purpura is probably due to
vessels and the blood presents no constant
ormal, one observer has in several cases
xcess of iron and a general diminution of its

blood contains an excess of fibrin, but
tion in the number of red corpuscles, and
low specific gravity.

orrhages are also of frequent occurrence in
there is no marked constitutional predis-
mple in the plethoric where the blood supply
associated with deficiency of quality in the

blood, or where vitality generally is low, and in women when menstruation is imminent or in process, the extraction of a tooth is sometimes followed by a vicarious discharge of blood from the wounded surface.

The natural method of the arrest of hæmorrhage may here be briefly considered, before passing on to details of treatment, inasmuch as the most rational and successful treatment will have for its object the assisting Nature in her own efforts.

The coagulation of the blood has also an important relation in this connection, for the process of repair and permanent arrest of hæmorrhage are carried on by its aid as a scaffolding for the construction of new tissue. In man, blood two or three minutes after being shed becomes viscid, five minutes later a jelly is formed, and a few minutes later still, the jelly contracts forming the clot, and a clear yellow liquid, the serum, oozes out. The immediate cause of coagulation is the formation of fibrin (of which blood yields about 2 per cent.) Fibrin is formed by the union of two albuminous bodies in the liquor sanguinis paraglobulin and fibrinogen, by a third body of the nature of a ferment.

Blood coagulation is more rapidly brought about by contact with foreign matter, by moderate heat, by stasis of blood in the vessels, or injury to their lining membrane, by free exposure to air, by the addition of certain substances.

The natural arrest of hæmorrhage is divided into two stages:—the temporary arrest, and the permanent arrest ; a failure in the former constitutes recurrent or reactionary hæmorrhage, a failure in the latter, secondary hæmorrhage.

Capillary hæmorrhage is mainly arrested by the formation of clots in the capillaries and very small arteries. This clotting is favoured by the exposure of the blood to the air by the inflammation set up in the capillary wall, consequent on the injury received in its division, and also by the diminished force of the circulation due to the reflex contrac n of the small vessels, which takes place from the stimulan of the muscular coat caused by their rupture or vision.

The arterioles, therefore, are diminished in calibre, the ood within their ends clots, the tooth socket is filled with m blood clot, and the hæmorrhage is temporarily arrested.

The method of the permanent arrest is not so well seen in ase of capillary hæmorrhage as when a large artery is cut ross; in the latter case invasion of the internal and ternal clots by leucocytes and proliferating cells takes ace, and a mass of vascular granulation tissue is formed out the end of the artery, which eventually becomes ganised into fibrous tissue. In the case under consideran permanent arrest may be considered as going on *pari ssu* with the healing of the wound, which is brought about the second intention.

And now, gentlemen, it is for us to consider how we can st promote Nature's objects, namely: the closure of the ssels, and the inducing of the blood to coagulate. I shall erefore consider first, to some extent, the detail and tionale of the various methods in common use, and afterards take up the subject of treatment in a more practical anner.

Heat and Cold are useful in the arrest of slight hæmorage, or in furthering its arrest in ordinary cases where ere is no tendency to excessive bleeding. Application is ade in the form of hot or cold water. The action is to use contraction of the muscular coats of the vessels, thus rectly diminishing the blood flow, and giving the blood ready shed an opportunity of coagulating. The important oint to notice is, that if heat be employed the water should really hot, from 110 to 120° F. as water merely warm courages the bleeding by washing away any clots already blocking the vessels. In obstinate cases cold might be employed in the form of the ether spray.

Pressure. This may be made in an endless variety of ways, and is of the greatest utility, its action obviously being mechanical. After tooth extraction, the best plug is the extracted tooth; the graduated compress, wax, cork, composition, and wooden plugs are in common use, aided by closure of the jaws, and a stout bandage tied under the chin and over the head. An ingenious instrument called the alveolar tourniquet has been devised with a special view to keeping up sufficient compress pressure in cases where the opposing teeth in the other jaw are absent. The appliance consists of two blades united at one end, and capable of approximation and compression by means of a screw, the other extremities being free; these latter are armed with pads, one being applied to the plug in the mouth and the other to the exterior. When the bleeding is in the lower jaw, the exterior blade passes under the base of the horizontal ramus, when in the upper jaw, a long sweep is required to grasp the top of the head. This tourniquet, it is hardly necessary to say, is not in use, a compress within the mouth, such as a piece of cork, hollowed to fit the edentulous gum, being quite as efficient in maintaining a steady pressure.

The *cautery* is sometimes applied in obstinate cases, but it should only be tried as a *dernier ressort*; it arrests bleeding partly by its action on the muscular coat of the vessels, and partly by inducing coagulation, but its most important action is in charring the tissues, and so producing an eschar which checks the flow of blood. It should be employed at a dull red heat, as, if used hotter than this, it simply destroys the tissues, without producing the above effects. The objection to its use is that it causes a certain amount of tissue destruction, and on separation of the eschar further hæmorrhage may ensue. This objection is to be urged against all escharotics.

Styptics or local hæmostatics are a class of drugs
ble in treating such cases as we are considering;
est used in conjunction with pressure. They are
o three classes, (1) those acting on the blood, these
en coagulation or precipitate albumen, and thus
leeding point. (2) Those acting on the vessel
oting their contraction. (3) Those acting on the
r tissues; they arrest hæmorrhage by combining
onnective tissues, precipitating their albuminous
and rendering them more compact than normal,
bleeding vessels are compressed and closed.

styptics act in more than one of the methods
ibed, I shall simply bring before your notice some
s in common use without attempting to classify
ding to the above.

acid. This is the most powerful vegetable astrin-
æmostatic, and it possesses the greatest therapeutic
may be used in the solid form and acts in the
eviously described, save that it does not actively
ntraction of the vessels, on the contrary it actually
n, but its indirect action on them in condensing
scular tissues far more than neutralises this

ide of iron. This drug acts precisely the same
id, but if employed in dental practice, the greatest
l be used. Inflammation and sloughing of the
w its application, and on separation of the slough,
e may recur; furthermore, the tongue and
lackened by the sulphide formed by its decom-

of silver. This preparation possesses the useful
actively contracting the capillaries, and causing
lation of the blood, both within and without them;
causes acute pain and a certain amount of slough-

ing, though not so much as perchloride. The solid caustic is an excellent application in bleeding from leech bites.

Matico. The matico leaf contains a certain amount of tannic acid, but probably its action is physical, its rough and hairy undersurface greatly favouring coagulation of blood, apart from any medicinal virtue it possesses. To ensure the best results it should be applied *secundum artem.* The leaf, having been thoroughly softened in steam or hot water, should be cut into strips as wide as the vacant alveolus is deep. These should be rolled up into a form resembling that of a cigar, and of such a size as to fit the alveolus; in rolling, the rough side should be kept outwards. These rolls are taken in the dressing forceps and passed down to the bottom of the alveolus, introducing the pointed end first. In teeth with more than one root small rolls of matico should first be placed in each vacant socket, and care should be taken to make them fit as closely as possible. Mr. Tomes has never known it to fail in a single case where its application was satisfactorily made.

Oil of turpentine is another local hæmostatic of great power, and probably this old remedy has never been superseded.

Now, gentlemen, what are we to do when a case of alveolar hæmorrhage presents itself for treatment? First of all, as regards prophylaxis, we should never operate on a patient, if the hæmorrhagic diathesis is known to be present, unless such operation is absolutely necessary. If such be the case, the free exhibition of ergot and sulphuric acid for some days prior to the operation, and the immediate plugging of the alveolus without waiting for bleeding to take place have proved very successful.

Furthermore, in certain cases, I would not advise the immediate extraction, say of a "broken in" root of an upper molar, at the sacrifice of much gum and alveolus, especially if one or two attempts have already been made. Profuse age often follows such a procedure, especially where eolus has been cut away, and if it is not dangerous t, it is certainly very troublesome to the patient, and ew cases would it be beneficial. The bleeding in ch cases may stop temporarily, but it is very easily l ; the vibratory motion of a ride in a 'bus or railway or the assuming the horizontal position at bedtime, er especially when a tooth has been extracted late at ften being quite sufficient to bring it on again.

tal practice the presence of hæmophilia is seldom beforehand, and our suspicions are never aroused patient comes to us a day or two after the operation ch prostrated condition.

rst thing in treatment, and on this I lay great stress, ove the loose clot already present, and thoroughly the tooth socket with hot water, by so doing the age may be checked temporarily, and the introduc- medicated plug rendered easier, it is no less unsur- n foolish to dab tannin or turpentine about the part attempting to get down to the bleeding point. In ses it will be found quite sufficient to plug the cavity with iodoform gauze. Take a long narrow strip t pointed at one extremity, introduce this pointed , and fold the gauze over upon itself till the socket is eping the plug firm and solid and close to the walls veolus. Or wool, dipped in mastic, and well rolled , may be employed, and makes a most excellent all rolls being passed down first, according to the of roots of the extracted tooth. Another good s to dip a small pledget of wool in oil of turpentine loride of iron ; pass this right down to the bottom ocket, then methodically fill up with strips of lint. nd wax plugs are often used, but I prefer such a e as lint or gauze, it can be kept better to the walls of the tooth socket, and the nature of the material greatly assists blood coagulation. The best plug, as before said, is the extracted tooth with a few shreds of wool soaked in turpentine placed round the apex of the root, the tooth, however, is not always to hand. Whichever method of plugging be employed, it is of great importance to keep up pressure on that plug within the mouth ; sometimes a figure of eight ligature round the two teeth on either side of the socket may be applied, or lint may be, as it were, built up on the top of that in the socket kept in position by firm closure of the jaws, or a plate of shellac or composition may be moulded over the jaws. Reference to the use of a piece of cork for the purpose in edentulous cases, has already been made. The particular method employed is of little importance provided the object is gained, firm and constant pressure. A bandage under the chin is a useful accessory, rendering the pressure very efficient, and at the same time affording relief to the muscles. In severe cases it is better to employ it than depend on the volition of the patient.

When the hæmorrhage is indicative of some constitutional vice, internal remedies should not be neglected. Gallic acid, ergot, or oil of turpentine may be given, and are the most successful remedies in recorded cases. The two following prescriptions are given by Salter.

R Vitelli Ov ij.
Olei Terebinth ʒjſs.
Sacchari ʒij.
Tinct. Ferri Ses chloride ʒiij.
Aquæ ℥viij. M

A teaspoonful to be taken every hour.

R Acidi Tannici gr. v.
Spt. Vini Rect. ʒſs.
Aquæ ℥jſs.

To be taken every hour.

rcumstances should be attended to. The patient py a cool apartment, and keep the upright posture, bed his head should be elevated as far as possible. when the hæmorrhage is associated with sup- struation, the treatment should be directed to the

two alarming cases the common carotid has been good result; but digital pressure on the carotid prove of the greatest service. In a case of Mr. en severe injury was done to the inferior dental compound comminuted fracture of the lower jaw, ure kept up by relays of students for two hours completely controlled the bleeding. The operation the inferior dental canal, cutting into it by a drill e is suggested by Mr. Tomes as likely to prove of n the lower jaw is involved, the cylindrical hole produces no surface laceration to speak of, and operation fail, the patients' condition is no more before.

ant, I will just say a word about the treatment of e after leech bites, this hæmorrhage is often pro- t of all proportion to the injury inflicted.

n shown recently that the leech secretes a fluid, he chemical property of preventing blood coagu- s fact renders the treatment obvious; thorough the part after which the application of collodion or ll suffice.

sion, gentlemen, I must thank you for having h such attention to a paper which has nothing recommend it, and no new suggestions to offer. I tisfied if I have opened up a field for discussion e, whose greater knowledge and wider experience, them to speak with authority on this subject.

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DENTISTRY IN FRANCE.

PROBABLY most of our readers are aware that dental practice in France has recently been made an affair of State, and that at the end of last year a new law was passed which, while making alterations in existing medical arrangements, provided also for the regulation of the practice of Dental Surgery. Unfortunately, but perhaps naturally, the Act did not please everybody concerned, and the discussions preceding its promulgation led to the formation of two separate camps. Those in favour of State interference were opposed by others who wished to maintain a condition of free practice of the Dental Art. We regret that legislation should have led to such disruption as was manifested in professional circles; and, whilst recognising as a personal gain, the establishment of a new dental Journal, which was to some extent an outcome of the differences in opinion, yet we hope that evidence of reconciliation is forthcoming. We believe that now the Act is an accomplished fact, both sides will work together to make the best of it. Incidentally, the two Schools in Paris, which we believe contain members of both parties, have been subjected to such hostile criticism as may perhaps afford a common ground for a friendly understanding.

M. MAGITOT has published in the *Gazette hebdomadaire de Medicine et chirurgie*, an article dealing with the organisation of professional education of dentists. He is of opinion that this must be carried out in one of three ways, Faculties of Medicine, by the Hospitals, or by ols. With regard to the first suggestion, he hat there are insurmountable difficulties. Supair of Odontology were created, there is no one the Faculties are practically close corporations, d take "at least two or three years" to turn a edicine into an expert dentist. On the other s teaching were merely theoretical, the pupil liged to complete his education elsewhere. In he teaching at a general hospital, there would etical course; and however good the opportunities teaching may be, operative and mechanical nust fare badly. The only proper solution M. Magitot, lies in the creation of a special our insular ignorance we had always imagined dental schools were already in existence in ing was carried on in a somewhat analogous hat which obtains here. It is true that the of a diploma upon its own pupils by the teachnstead of by an independent Corporation, has one important difference between English h schools, but the latter could point to a ndition of things in America. But M. special school would be under an unique t, of an exclusively medical character, and be r the control and authority of the Faculty of In fact, he thinks that as the State, by its new es official instruction in dentistry in association w title thereby instituted, the only way to disbligation is to create a special school in which a ourse of theoretical, clinical, and technical would be provided. Perhaps in order to his position, M. Magitot says he cannot keep regard to the special schools which have, for some been in existence, and which, at first sight, it hought could be utilized in the organisation he He says they are entirely devoid of any scientific the diploma they grant is worthless, and that they are merely associations of lecturers and clinical teachers. I appears to us a matter of regret that it should be thoug necessary to allude to the existing schools in such a disparaging manner. If there is need for improvement surel now is the opportunity for them to rise to the occasion an show themselves capable of adaptation to the new circumstances. They have apparently done good service in th past and if, as we expect, they are able to show, independently of the spur of such criticism, a determination t work amicably together in furtherance of the new law, the they will scarcely have to defend themselves, and this passin episode may be allowed to be soon forgotten.

Amongst other matters affecting French dentistry, and t which we hope some time to draw attention, we notice tha a provincial association of dentists has sent a petition to th Committee on Higher Education. It is, in fact, a prote against the centralization, in Paris, of professional instru tion, and contains a suggestion that the provincial Facultie and Schools should be utilised.

BIRMINGHAM AND DENTAL EDUCATION. The *Birmingham Daily Post* says that the Birmingham Dent Dispensary was the first provincial dental hospita and that Birmingham may thus claim the honour of leadin the provinces in the higher education of dentistry. Fro temporary rooms in Temple Street the dispensary migrate to rooms in the Upper Priory; afterwards to more convenient premises in Broad Street; and finally about ten yea ago to the present commodious Dental Hospital in Newha Street. In the year 1880 the Faculty of Dentistry was esta lished in connection with Queen's College, lecturers being appointed in the special dental subjects, and arrangements ma with the General, Queen's, and Dental Hospitals for hospit practice, and shortly afterwards with Mason College f chemistry and metallurgy lectures. From simple beginnin the school has made rapid progress, the record of successf highly gratifying ; indeed, it can boast the unbroken record of success, no failure being a student who has completed his curriculum. ast this department migrated, with the medical ason College, and the authorities at once recog- portance of making the training as complete as the establishment of a special dental museum of comparative dental anatomy, and a dental here the higher branches of the mechanical art actically studied, together with a special course etallurgy. The course of study pursued at ge consists of special lectures, demonstrations, al dissections, and the use of the microscope for and anatomical research, the lectures being ith the lime-light lantern. For practical dental dents attend the Dental Hospital in Newhall has recently been considerably enlarged to creased number of students, one of the most itions being the erection of a large room capable lating twenty operating chairs, where the various conservative dentistry are taught by a large rary and assistant dental surgeons. The hos- ete with appliances of the most modern descrip- r to perfect the students as dental operators. , it has fully realised the anticipations of its fording annually relief from pain and skilled thousands of the suffering poor of Birmingham ict.

ICAL REGISTER" FOR 1893.—From the statistics ng the preliminary matter, in the recently pub- ter, there will be seen the continued growth of profession. During 1892, no fewer than 1513 ed practitioners registered their names, against e preceding year, and the total number of in the United Kingdom, which at the begin-ing of the year 1876 was 22,200, has now risen to 30,590. This increase in number has been attained notwithstanding an average annual death rate of 569, or an average annual removal from the Register, from all causes, of 834 names. Of the 30,590 Practitioners whose names now appear in the Register 18,622 or 60.88 per cent. were registered in England, 7320 or 23.93 per cent. were registered in Scotland, and 4648 or 15.19 per cent. in Ireland. The new "Colonial Register" instituted by the "Medical Act (1886)" now contains 14 names, representing the Universities of Melbourne, Sydney, New Zealand and Bombay, the last of which was recognized by the Council last year in consequence of the extension of the Act to India by order in Council.

The correctness of the "Medical Register" so far as it is possible to ascertain it, has been ensured by the thorough revision to which it has again been subjected.

HÆMORRHAGE FROM THE PALATE.—Dr. J. A. daGama, at the Grant Medical College Society, Bombay, described a case sent to him for diagnosis. The patient, a medical man, aged 57, had suffered from epistaxis, which lasted about three months on and off. For the last month there had been no distinct epistaxis, but it was noticed that each time solid food was taken some hæmorrhage occurred, and it was thought that it might have been from the gums, or some slight accumulation in the nasal fossæ. It was, however, definitely found that the hæmorrhage came from one minute spot, less than a pin's head, situated over the roof of the mouth about half-an-inch above the alveolar border and to the left of the median raphe over and between the roots of the second bicuspid and first molar. There was no perceptible ulceration of the mucous membrane with the exception of a slight erosion, but even a small piece of boiled vermicelli taken in soup was enough to cause hæmorrhage by a very minute, slow, and continuous current of arterial blood appearing to come from a capillary branch of the posterior

one of the nutrient arteries. Astringent
local styptics were tried without benefit.
er was applied, but when the eschar fell off
use bleeding. There was no constitutional
found to account for the symptoms but ergot,
perchloride were tried internally.

THE MOUTH DURING MERCURIAL TREATMENT.
ll Williams in describing the method of treat-
hilis by the inunction of mercury, points out
of paying attention to the oral cavity. Be-
inunction he always examines the patient's
thinks that much of the so-called ptyalism
if the teeth are scaled, should the gums be
o the presence of tartar. He recommends
to be rubbed into the gums twice daily in
n them and prescribes the following mouth-
sed whilst the patient is under inunction.
of alum, two and a half drachms of acetate of
chm of essence of peppermint, warm water to
nces. The salts should be dissolved separ-
ix and filter and add the essence to the clear
mouth should be washed four or five times a
preparation.

DENTAL ASSOCIATION.—The first annual
Women's Dental Association of the United
ld last month. It was decided to make the
tional, and Vice-Presidents were appointed
te represented. There are now thirty-two
esenting nine States.

The late Mr. T. S. Minett.—We desire to draw attention to a letter in our correspondence column which appeals to the sympathy of those of our readers who may find themselves able to render some assistance in an urgent case. We have already alluded to the sad circumstances under which Mr. Minett lost his life. He was an old student at the National Dental Hospital, where he took several Class medals, and was known as an expert operator. An effort is now being made to secure the election to the London Orphan School, of one of a large family left behind, and any of our subscribers having votes, or being able to influence others, should bear the case in mind.

Analgen.—Spiegelberg has tried this drug in ten cases of pure neuralgia, with a good effect in eight. One case of hemicrania was also relieved. The drug was usually given in doses of about forty-five grains during the day. It is tasteless, and in other respects no bad results appeared, although it was always observed to redden the urine more or less. Headache in one instance, and tinnitus in a few others, were complained of.

Bacteria in Drinking Water.—A report made to a Committee of the Royal Society by Professors Frankland and Ward, contains some interesting results as to the effects of sunshine in destroying spores. The anthrax bacillus, as one of the hardiest forms of pathogenic organisms when in the spore condition, was taken for experimentation. In the dark,and at ordinary temperatures the spores retain their infec tive power for many months either in fresh or sterilised water, but in direct sunlight they undergo rapid destruction, and this has been proved to be due entirely to the light rays and not to rise of temperature nor to any action of solar rays on

The spores are really killed and not merely velopment. Infected sterilised waters, after even months, were invariably fatal to the nich they were inoculated, whether the water absolute darkness or in diffused daylight. was, however, rapidly fatal to anthrax spores within eighty-four hours.

PROFESSION.—Under this title, Mr. Sewill pamphlet, the principal object of which is he development and present position of the al surgery,—the branch of the Medical t recently organised by Act of Parliament, h least is therefore commonly known." It which we suppose is within the knowledge sts, but as the author does not think the her buy or read literature of this kind it is the pamphlet shall be distributed by the on among "politicians and publicists," as For this purpose, Messrs. Baillière, Tin- will supply copies in quantities of not less a reduced rate.

CRETA CREAM.

alk 3 oz.
agnesia 2 drs.
e Cas-
40 grains
d add —
... 1 minim
... 1 „
long time.

Oil of sweet orange 1 minim
„ lavender-flowers 1 „
„ rose geranium 3 „
Mix thoroughly, then add a mixture of—
Glycerine ... 1 oz.
Water ... 6 drs.

Abstracts of British & Foreign Journals.

TREATMENT OF DIFFICULT CANALS IN MOLARS.

By Dr. W. R. Blackstone.

The author came to the conclusion that he would adopt an entirely different procedure in the treatment and preparation of canals, especially the buccal, of the superior molars and bicuspids, the inferior incisors and molars. The method proved to be entirely successful; so that he has no hesitation in recommending it in all such cases. It is, *not to fill them at all*. How many of such canals are absolutely filled to the apex and hermetically sealed? It is doubtful if one in one hundred is thoroughly closed. There must be an intervening space between the filling and the apex, and unless the end of the root becomes encysted, so to speak, there must be an exudation of a small amount of fluid into the canal; this becomes putrescent, and finally inflammation of the peridental membrane results. If space necessarily exists in ninety-nine out of every one hundred of such cases, why not have it the entire length of the canal? For we can safely say that we will have no more trouble with one than the other.

The manner in which he disposes of a superior molar with a putrescent pulp which has been devitalized by arsenic, or has died as the natural consequence of exposure, is first to adjust the rubber-dam and gain access to the pulp-chamber and canals by the liberal use of burs and chisels; but previous to opening into the canals a solution of hydrogen peroxide and bichloride of mercury is injected into the cavity, which is kept well filled with the antiseptic solution during the process of preparation. After the cavity and pulp chamber are thoroughly free from carious matter, proceed to remove the remains in the canal by the use of small broaches and hooks made from piano-wire and platinum, followed by reaming slightly at the entrance to the canals, keeping them and the cavity well filled by repeated injections of the bichloride solution. When satisfied that all particles of pulp and *debris*, "as far as possible," are removed, the process of drying is next undertaken. This is done by the use of the hot-air syringe and the Evans root-drier, followed by dressing the canals with a solution of iodoform in oil of eucalyptus, subsequently using the hot-air syringe until the eucalyptus is evaporated, leaving the canals well lined or covered with a coating of iodoform.

Here the operation is completed, so far as the canals are concerned. Filling the pulp-chamber with an oxyphosphate cement and the cavity with gutta-percha, the patient is dismissed, and advised to return by appointment to have the treatment completed by filling the cavity with gold or amalgam. Theoretically and scientifically, this method may be unsound; but practically it is a perfect success. The cases are very rare that return with symptoms of pericementitis. If inflammatory symptoms arise, the use of cotton saturated with methyl chloride applied to the affected parts produces very gratifying results. Should the case become obstinate, and the inflammation not subside by the use of counter-irritants, the filling is removed, or an opening is made through the alveolar process to the apex, which is seldom necessary.

The superior bicuspids, inferior incisors, and the anterior roots of lower molars are treated substantially the same way, and invariably with pronounced success. The roots that have larger canals, such as central incisors, cuspids, posterior roots of inferior molars, etc., are prepared and treated with the same care as previously stated, but in no case is the canal filled to the apex. He depends entirely on the roots being thoroughly aseptic before filling the pulp-chamber and cavity. Nature completes the operation more thoroughly than the most skilful operator, by encysting the apex of the root, which is accomplished as well with the canal empty as when filled, without the injurious effects that might occur from forcing particles that may be retained through the foramen by the materials used in filling.

Of course there are exceptions to all rules and methods, and the only one in this case is the preparation and treatment of cuspids, central and lateral incisors, for crown and bridge work, where we depend on the post for strength and durability. In such cases the canal is filled as near to the apex as possible with a stiff paste, made from oil of eucalyptus and iodoform, to prevent air-pressure and the possibility of cement being forced through the foramen when adjusting the crown or bridge. In using the screw-post for molar and bicuspid crowns, the canals are reamed to correspond with the size of the post. By the use of cement mixed very thin it is gently inserted and held firmly until the oxyphosphate has thoroughly hardened. When the operation is completed you have a canal that is virtually empty, but one that ca be trusted with the utmost confidence.

The Dental Cosmos.

CONTRIBUTION TO THE STUDY OF GREEN TARTAR.

By PROFESSOR R. HEIDE and M. CHARPENTIER, of the Dental School of Paris.

The salivary concretions are composed of earthy salts an organic matter. Phosphate and carbonate of lime, an fibrin, are the principal elements of it; there also enters int the composition a small quantity of greasy matters. The relative proportions of these various elements differ with the consistence of the tartar and according to the individuals. W note four principal kinds of tartar :

1. Tartar soft, dry, and very tough, which is deposite around the necks of the teeth and never exists in large quantity.

2. Yellow tartar, which adheres strongly to the teeth force is sometimes necessary to detach it.

3. Lightish yellow black, deposited at the gum-margi especially on the exterior next the cheeks. This tartar disposes to caries the points where it is deposited. It is no tartar in the true acceptation of the word, but an infectiou deposit, a fermentous medium, with permanent acid reactio (Viau).

4. Finally, green tartar, which, contrary to the othe kinds of tartaric deposits, does not come from the salivar glands, but is produced by a parasite from the exterior,—th *Leptothrix buccalis* (Robin).

Robin, in his book, "On the Parasites of Man," had range the leptothrix among the algæ, but since then bacteriologist have placed it in the group of bacteria, order of *Leptothrichees*, characterized by filaments, curled or not.

(Translated from the *Revue d'Odontologie* for January, 1893.)

rix has from 0.1 to 1 m. width, of a blue ubjected to the action of the iodine, but is lf. It may take various forms; its filaments the aspect of short sticks as of micrococci. ne conjunctival mucus it produces suppuration. into the larynx, trachea, and the bronchi of ive paralysis of the muscles of deglutition, in in those suffering from croup. It may result inflammation of the bronchial extremities and e lung. It is found in the spittle which comes nous locality, and in the vagina, mixed with ganisms. This micro-organism multiplies in ked, whence the necessity for removing it as le.

has cultivated the leptothrix on peptonized

of green tartar on the teeth, besides its dis-earance, has injurious effects on the enamel and caries. It is important, therefore, to remove it , but we know how difficult this is by the is. We use a process which has given very It consists in rubbing the teeth with amixture of pulverized pumice-stone and tincture of tter acts probably as a parasiticide. Whatever esults we have obtained by this process are cer- to those of ordinary means.

The Dental Cosmos.

CLEANSING SPONGES.

. Henson writes to the *British Medical* ggest the following method of cleaning sponges se. The dirty sponges are placed in a large henware bath, with just sufficient commercial cid (strong) to cover them, and squeezed well estle several times; then transferred to a bath ter under a tap, and all the acid, etc., well When properly done the sponges are quite n, and retain all their elasticity and absorbent

FAILURE IN CROWN WORK.

By H. B. MEADE, D.D.S., BUFFALO, N. Y.

Many articles have been written concerning the failure made in banding roots for crown work, and many dentists hav abandoned the use of collars or bands entirely, because a fe cases have come under their observation in which a band wa poorly adjusted, there being a V-shaped space between th band and root, the parts being in a highly inflamed conditio If bands are to be fitted in this manner, it would be better t discontinue the use of them at once, but with the exercise intelligent care, no such space is necessary.

We must bear in mind that we are dealing with one of th most delicate tissues of the human anatomy, when we exten a band so far up the root that it interferes with the periden tal membrane. If we take into consideration the anatomic form of any of the anterior roots after the crown has bee excised and ground down to the gum line, and then imagin the fitting of a band to nothing more or less than a con commencing at its base, we will at once see how the shaped space is produced, as the band must necessarily be large as the end of root, that it may be driven on.

To overcome the V-shaped space, and have the par remain in a healthy condition, the band must not be driv on a root that has had no other preparation than merely t crown excised and ground down to the gum margin. T remaining portion of the enamel that lies under the fr margin of the gum must be removed, care being taken so shape the root that its sides will be parallel, and the ban must not extend further than the free margin of the gum. band adjusted in this manner (using pure gold) will cause inflammation. The end of the root should be ground conca from labial to palatal surfaces, giving it the same curvatu as the gum line. This will make the fitting of the porcela crown to the band an easy matter.

Dental Pract. and Advertiser.

Review.

The Medical Annual and Practitioners' Index, 1893. Bristol: John Wright & Co.

We have again received a copy of this work of reference for Medical Practitioners, which has now reached its eleventh anniversary. For those who wish to keep themselves in touch with what is new in the way of remedies and methods of treatment, it seems a valuable book. As we pointed out last year, there are no references to distinctly dental matters, but one or two points of interest struck us. Most dentists recognise the importance of good eyesight, but there are perhaps some who have not yet had brought to their notice the value of scientific aid when the proper time arrives. In the book before us quotations will be found from a paper on "Some prevalent errors relating to eye-strain." Eye-strain is said to exist whenever errors of refraction or a maladjustment of the tendons that move the eyeballs in unison with each other, can be demonstrated; and Dr. Ambrose Ranney points out that to attempt the determination of refraction without the use of atropine is unscientific. He has yet to encounter a case of typical sick headache that is not associated with eye-strain.

For Trigeminal Neuralgia, Victor Horsley first advises recourse to drugs, relying mostly upon quinine, combined with arsenic and gelsemium. Antipyrin and antifebrin are sometimes of service; opium is to be avoided. Chloride of ammonium, aconitine, and counter-irritation over the spot where the nerve emerges, or along its course, are useful. In some cases the galvanic current relieves the pain, but when such measures fail, the stretching, dividing, or removal of a nerve must be considered. A good account of Horsley's and Rose's operations will be found under this heading, and at the end of the book are notices of new inventions, improvements in pharmacy, and dietetic preparations.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, March 6th, 1893. Mr. R. H. Woodhouse, M.R.C.S., L.S.A., L.D.S., Vice-President, in the chair.

The Minutes of the previous meeting were read and confirmed.

Mr. T. A. **Rogers** requested the permission of the Chairman to make a slight correction in what he was reported to have said at the Annual Meeting. He wished the word "ultimately," to be substituted for the word "independently," so that the corrected sentence would read: "I never concealed the opinion that the Odontological Society must have its own home ultimately."

Messrs. H. J. Messenger and F. W. Barrett signed the obligation book, and were formally admitted as members.

The following nominations for Non-resident Membership were read before the Society:—

Durward, P. Stewart, L.D.S. Edin., 127, Mayfield Road, Edinburgh.

Fraser, James Leslie, L.D.S. Edin., 5, Castle Street, Inverness.

Shiach, Gordon Reid, L.D.S. Edin., 1, North Guildry Street, Elgin.

Smith, Arthur Hopewell, L.R.C.P. Lond., M.R.C.S. Eng., L.D.S. Eng., Lindum House, Boston, Lincolnshire,

Stewart, James, L.D.S. Edin., 19, Princes Street, Perth.

The following gentlemen were balloted for, and unanimously elected Resident Members:—

Baly, Chas. Francis Peyton, L.D.S. Eng., 140, Harley Street, W.

Blain, Edward John, L.D.S. Eng., 35, Moore Street, Chelsea, S.W.

Clarence, Thomas Herbert, L.D.S. Eng., Chase Side, Enfield, N.

Gardner, Ernest, L.D.S. Eng., 139, Victoria Street, S.W.

Hayward, Henry Saville, L.D.S. Eng., 12, St. Anne's Terrace, Circus Road, St. John's Wood, N.W.

ft, George, L.D.S.Eng., 4a, Portman Mansions, W
Edward John, L.D.S. Eng., 1, Hanover Sq., W.
dward F., L.D.S. Eng., 176, Brixton Rd., S.W.
Herbert John, L.D.S. Eng., 72, Jenner Road,
ngton, N.
Charles J., L.D.S. Eng., 2, Heathfield Road,

dent Members:—
Douglas Phillimore, L.D.S. Eng., 47, East Street,

, William Henry, L.D.S. Eng., Palace Gate,

thur Curling, L.D.S.Eng., Rockholme, Hastings.
rbert L., L.R.C.P, Lond., M.R.C.S. Eng., L.D.S.
holme, Hastings.
tavin, L.D.S. Eng., 7, Manningham Lane, Brad-

Ernest, L.D.S., Eng., High Street, Ventnor,
ht.

ARIAN reported that he had received—*The Jour-*
tomy and Physiology, for January, 1893, *The*
Pathology and Bacteriology, February, 1893,
eedings of the Royal Society, *The List of*
embers, and Licentiates of the Royal College of
of London, the *Calendar of the Pharmaceuti-*
for 1893, and "The Mechanics of Daily Life,"
y Mr. Brunton.

IERN brought forward two casual communications
ase of uni-lateral paralysis of the soft palate;
plications for facilitating the operation of pivot-

se of uni-lateral paralysis of the soft palate he
say that the patient had failed to attend the
he thought the great interest lay in being able
atient and hearing her speak. The tone of voice
d of speech were so similar to ordinary cleft
it was mistaken for such by the Secretary of the
d Society, who sent her on to the Dental Hospi-

nt, a woman aged 20, suffering from paralysis of
late on the right side, applied at the Dental
see if anything could be done to render speech
ct. She also complained of great annoyance
escaping through the nose when drinking. On

looking into the mouth the right side of the velum was sc to be drooping and pendulous, and also insensitive to touc The symptoms dated from an attack of scarlet fever at t age of 3 years. Feeling that nothing could be done for by mechanical means, he was anxious to see if anythi could be suggested as a means of palliation at a gene hospital; accordingly he took her to the Middlesex Hospit and put her under the care of the physician in charge the Electrical Department.

Dr. Wynter's notes were as follows:—Aspect of pati is suggestive of congenital syphilis; lower lip everted, a dribbling present; right side of soft palate paralysed so t air and fluids escape by the nose. There is clumsiness movement of right arm and leg, and knee jerk on this s is exaggerated. Pupils act to light, but are unequ Palate re-acts to fourteen cells; Faradic contractibil absent. Patient is the youngest of three, and one of twi The condition is probably due to thrombosis of a cereb vessel with hemiplegia during childhood.

Mr. Hern next showed and described a set of instrume for preparing roots for pivots. He did not claim origina for them; they were merely modifications of pre-exist forms. They all knew how important it was, in prepar roots for pivots, to cut the anterior surface of the sufficiently under the gum margin without injuring many instruments had been used for this purpose—fi corundum discs, &c.—but they all produced a certain amo of irritation and wounded the gum margin; these ins ments cut the root well under the gum without injury they cut on the *flat surface only*, the periphery be smooth. They were made in sizes to correspond to diameter of the root they had to cut, and not only cut un the gum margin, but left the root such a shape that artificial tooth may be easily fitted to it. Mr. Hern furt exhibited an appliance for taking a good model of the after it was cut. It consisted of a small copper shield al the diameter of the root, soldered to a guide pin. W the root is properly shaped and fully prepared he takes of the shields or root trays and bends it to the angle of root, and then puts some softened gutta-percha on to upper surface. This is then pressed on to the root and gutta-percha forced up under the gum. An impression w the shield *in situ* is then taken with ordinary compositi and in this way an excellent model results.

·. **Brunton**, in describing a root canal reamer which he nade, alluded to the difficulty experienced in preparing s for filling, for instance, in the buccal roots of upper rs. He had contrived a small instrument which acted as mer and simplified the operation considerably. It con- l of a piece of pianoforte wire sharpened on three sides corundum disc, having a long fine point, and when ired for use inserted in a chuck running in the engine.

e also showed a new disc carrier, which may be rotated r to the right or left without any fear of the disc coming

e lastly exhibited a spirit lamp with a platinum coil hed, which by reducing the temperature of the flame, enting the sweating of foil or cylinders in annealing.

ie **Secretary**, for Mr. Trude Fripp, presented to the eum a couple of models showing transposition of canines ie there existed the peculiarity that the direction of the of the tooth from cusp to apex of root was backward, so the tooth would appear to have been developed somewhere e region of the first molar.

ie **Chairman** remarked that these cases were very often to the retarded development of canines, or the congenital ice of laterals.

r. **Baldwin** communicated a method of repairing bridge- and Richmond crowns within the mouth. After several ccessful experiments with a small blow-pipe flame in the th, he tried the simpler plan of using an ordinary "solder- iron" of small dimensions, with solder known as "pearl" er, which fuses at a very low temperature.

e takes a suitable tooth, and backs it with thin or ordinary ing– whichever suits the case—and then "tins" it, wards "tinning" the gold or platinum back which is still he mouth; having the work quite clean, the parts are hed with the ordinary soldering solution (Zn. and HCl.) then the solder placed at the junction of the two backings neans of the hot iron, and almost instantly the solder runs ugh and fixes the tooth tightly in position. The mouth pt dry by the rubber dam, if possible, asbestos twist and being packed around the part where the soldering is to ke place as a protection.

e finds this process applicable in other ways; for instance v days ago he had a lower bicuspid which was fractured itudinally through the pulp canal; he fitted a gold band d the tooth (to which he had previously attached two gold catches), and then by means of a Ladmore-Brun clamp, screwed the band up tight, soldered it in position, a afterwards drilled out and filled the pulp canal.

In the absence of the writer, the Secretary was then cal upon to read the paper of the evening, which is publishe page 385.

DISCUSSION.

Mr. F. J. **BENNETT** expressed his regret that the aut of the paper was not present. So large a field had b covered, and so hurriedly was each point dealt with, tha was very difficult to discuss it properly.

One remark of the writer's he was inclined to take exc tion to, and that was, that the formation of secondary dent after abrasion or attrition—dentine of repair—was a sign the beginning of the end. He thought the author must h confused dentine of repair with intrinsic calcification of pulp. If secondary dentine was formed opposite a spo very irregular though it might be—there was no loss of c tinuity between the hard tissues, the new formed tissue closely applied to and in continuity with the primary dent Then beneath that we found the pulp perfectly healthy, we got normal regular dentine formed

He was not of opinion that pulp nodules did much harn the pulp, but it was a sign that the pulp was already un going pathological change, and that might be considered be a sign of the beginning of the end, though he would at all like to say that dentine of repair was so; indeed if took the case of the teeth of rodents or elephants (with th continuous growing pulps), no sooner were they erupted t they began to wear away and secondary dentine formed; though this was the beginning of the end, the end was a v long way off. He would like to allude to one very inter ing point, and that was, in cases where there was an abs over a tooth and every sign of a dead tooth present, when drilling into it we were mortified to find the pulp alive; would be very glad to hear from the members of the Soci some explanation on this practical point.

Mr. C. S. **TOMES** was afraid he had not much to say c cerning the paper. Mr. Bennett had already touched u one or two of the most important points. It seemed to h that the paper went over a good deal of ground, and he h not been quite able to follow all the illustrations that w

Some conditions that were described as pathological o him to resemble those of normal pulp. We did stand the normal pulp very well, as we were con- eeing specimens which, whilst quite normal, appearances which were not familiar. estion of determining what constituted congestion p was one of difficulty, for whilst the condition was gnized with the naked eye owing to its colour, yet microscope the task was by no means so simple. at some method was wanted for measuring the com- izes of blood vessels when normal and when

JMMERY agreed with Mr. Tomes' remarks, and felt the pulps which had been illustrated that evening en stained for micro-organisms.

PEWELL SMITH was rather puzzled about micro- in connections with hypertrophy of the pulp, and uite understand how the condition was brought

LDWIN said the question which interested him most ar a pulp exposed by caries was infested by micro- It was generally understood that those pulps e traumatically exposed were free from micro- and those which were exposed by caries were them. Was it possible by antiseptic dressings to n a thoroughly healthy condition?

ILEY BARRETT would like to ask the author of the e with regard to the staining of teeth. So far as ations went the discolouration might be found in atients, or as the result of a blow or the application s acid. He would like to ask Mr. Watson as to cause of the staining.

AIRMAN: Mr. Watson will see the report of the and it is quite possible he will be able to prepare of reply to the various questions which have been this evening. I think it will be the most satisfac- of finishing up this discussion, for it is obviously without Mr. Watson.

SPOKES said in that case he would like to hear Watson an expression of opinion as to the process tion of the exudates; and with regard to what are stones, it would be interesting to know whether n considered that the process of calcification took place around blood vessels, or whether the presence of the blood vessels in these secondary deposits of dentine was accidental.

A formal vote of thanks was accorded to Mr. Watson for his paper, and to those who had brought forward casua communications.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

General Meeting, Tuesday, March 28th, 1893. Th President, Mr. P. A. Linnell, in the chair.

The minutes of the previous meeting were read an passed.

As the next meeting will be the annual meeting, t following gentlemen were unanimously elected auditors; f Treasurer's accounts:—Messrs. J. Wood and F. Bellaby for the library and museum—Messrs. P. Mawson and W. Forsyth.

Casual Communication.

Mr. Molloy presented a model of an upper jaw. On t left side in place of the lateral two supernumaries were *situ*, while the right lateral was normal.

Questions.

1. What is the best consistency to insert amalgams?

Mr. F. L. **Tanner** said that numerous experiments been carried out to solve the difficulty in inserting th fillings, and he had found that excellent results follow wh amalgams were inserted according to the directions of experimentalists. Those amalgams known as filings am gams, should be mixed as hard as it is possible to manipul them in the cavity, whereas copper amalgams should inserted "moist"

Mr. **Minshull** agreed with Mr. Tanner's remarks, especially so with regard to copper amalgams. He, h ever, had lately worked Dr. Ottolengui's method; burnish gold foil over and into the amalgams, while in their pla

ans of heated burnishers. Fillings finished
n, kept their shape well, and were infinitely
colour.

etrimental before inserting an osteo filling, to
avity with copal ether varnish ?

LEES said he had been prompted to ask this
ng to a failure he had recently experienced.
ished the cavity, and afterwards inserted a
After a short time, the patient returned and
on it was found that the filling had fallen away
He thought that failure was due to the presence
, allowing the saliva to find its way in, and
tion of the filling.

ULL thought that Mr. Lees had used the varnish
and had varnished the edges of the cavity,
teo should come in immediate contact with the
his, by accident, should occur, it should in all
bed away, or gone over with a finishing bur.
nish in many cases and had never had any
that Mr. Lees had experienced.

LL then called on Mr. J. A. Lees to read his
l "Hæmorrhage, and its Treatment," which we
ge 397.

DENT in opening the discussion, said he had
Ir. Lees' paper with great pleasure, as it was
all respects. It was a subject in which we all
ll posted up so as to be in a position to deal
ergency which might turn up. Fatal accidents
hage were now, he was happy to say, on the
his was the result of several causes. The im-
our instruments was one reason; the key used
nes was not the best instrument to handle if
s undesirable. Dr. Richardson mentioned the
in the nation's blood as a probable cause. The
e will serve to illustrate the plan of treatment
nell) adopts in these cases. A patient (girl) had
extracted, but the bleeding continuing, he was
ome and see her. He first plugged it with lint
annic acid. The hæmorrhage was not, however,
this step, and a model was taken and a plate
cavity was again plugged with lint and tannic

acid, the plate being brought to exert pressure on the plu After a short time, bleeding stopped, and the patient quick recovered.

Mr. **Molloy** enquired if it was necessary to plug all th sockets of a molar tooth.

Mr. **Tanner** referred to the concise, and eminently pract cal paper, which had been brought before them this evenin He agreed with Mr. Lees that the cause of hæmorrhag diathesis was some change either in the blood or the vess wall. With regard to treatment, he thought that cold an warm water was of little use to arrest the bleeding. Pe chloride of iron should never be used, as it produced su abominable results. Turpentine is much more preferab He had employed Dr. Richardson's styptic colloid with goo effect. He deprecated the application of lint and iodofor which was so unbearable to patients. Plugs of tannic ac and mastic were most serviceable, the plugs becoming excee ingly hard a few hours after insertion. Mr. H. Campio had demonstrated a case a few years since before the Ma chester Odontological Society, where a cork had been cut fit between opposing teeth, pressing on the plug. He wa of opinion that it was of little use applying plugs, &c., if th patient's blood would not clot. It was, therefore, his pra tice to set a few drops on a glass plate and see if clottin ensues. If this desirable process did not follow, ergot an gallic acid, and other internal remedies should be administer internally. With all the remedies he had enumerated, ver few fatal cases, if any, were likely to happen.

Mr. J. C. **Lingford** thought that Mr. Lees had light passed over the therapeutic effects of matico. Powder matico had been found to have very much the same hæmo tatic action as the leaf, and he was informed that Peruvia often applied it to stop bleeding.

Mr. J. A. **Lees** in reply to the various points discusse said he entirely agreed with Mr. Lin ell's remarks regardi the causes of decrease in quantity of fatal cases of hæmo rhage. The first step in treating these cases, was to wa out all the blood in the sockets, and he did not think th it was possible to distinguish from which socket the blo was issuing. Therefore he should prefer to plug all t sockets. With regard to the action of matico, he was it was of a physical character rather than a . He thanked all present for the kind opinions d passed on his paper.

ated the proceedings.

Dental News.

VACANCIES.

Dental Hospital. Assistant Dental Surgeon. o the Secretary, on or before May 25th.

ental Hospital. Anæsthetist. Applications to o the Secretary on or before May 25.

APPOINTMENT.

Vebster, M.R.C.S., L.R.C.P., L.D.S., appointed on to the Metropolitan Hospital, vice H. G. d.

Correspondence.

es not hold himself responsible for the opinions expressed lents.]

AN APPEAL FOR HELP.

litor of the "British Journal of Dental Science."

e permitted to call the attention of your readers to a d death of Mr. Minett, which was noticed in a recent OURNAL?

fe and seven children almost unprovided for, as his life only meets his outstanding professional liabilities due to his practice.

w students and other friends are contributing to a fund nost distressing case, and donations will be gratefully knowledged by Mr. F. E. Cutts, 28, Old Burlington Street, y,

W. RUSHTON,

t, W,

Dental Hospital Reports.

Work done at the Victoria Dental Hospital of Manchest
during the month of March, 1893.

Number of Patients attended .	12
Number of Extractions . .	
Number of Extractions under Anæsthetics .	
Gold Stoppings . . .	
Other Stoppings . . .	
Miscellaneous {advice, temporary fillings, scalings, dressings, &c. . .	
Crowns	
Irregularities . . .	
Total . . .	1

J. C. Lingford, L.D S. Eng., *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be
warded to the Editor, at the Offices 289 & 291, Regent Street, Lon
W., by the 8th and 23rd of the month, and must be duly authentic
by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address
always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary
age stamps are forwarded.
4. It is earnestly requested of our correspondents that their communicat
be written on one side of the sheet only, and we also beg to
particular attention to the importance of a carefully-penned signa
and address.
5. All communications relative to subscriptions and advertisements are
addressed to the Publishers, Messrs. J. P. Segg & Co., 289 &
Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMEN
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receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 608. LONDON, MAY 15, 1893. VOL. XXXVI.

CROWN AND BRIDGE WORK.*

By JOSEPH AINSWORTH WOODS.

Mr. President and Gentlemen,—

The subject which I have chosen for my paper to-night is such a very wide one, and so full of details which could be better and more interestingly shown in a clinic or demonstration, that I must of necessity only just touch on the fringe, so to speak, of the practice of Crown and Bridge Work.

To be an adept it is necessary to have had a thoroughly practical training otherwise we cannot hope to be successful.

Crowning in some form or other has been used for many centuries, but it was only about 50 years ago that it was practised as a general thing.

Sir John Tomes, then Mr. Tomes, in his Lectures on Dental Surgery at the Middlesex Hospital, in 1845, among other things describes the system of crowning, called "pivoting" then in vogue. It consisted in fastening a natural crown by a gold or wooden peg on to the root. "Pivoting," he says, "although the neatest, is more frequently followed by mischievous results than any other operation performed by the dentist, and so common are these, that many surgeons consider the operation unjustifiable." He then goes on to relate one or more cases of death following this operation, although done by well-known and clever men. By this we see the idea of making use of a tooth which the course disease or some other cause had rendered unfit to fill is n by any means a new one. The pain and discomfort which h mentions as so often following were the result, no doubt, septic matter in the pulp canal. Now-a-days, with our im proved and antiseptic methods of treating pulpless teeth, w do not get these same grave results, so that the operation perhaps the most satisfactory one we have in the whole dentistry.

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* Read before the Student's Society, Dental Hospital of Liverpool.

Before crowning a root, the first thing necessary will be decide what sort of crown will be most suitable ; havin decided that, we must prepare the root accordingly. I w not go into the subject of the treatment of pulpless tee to-night, that would open up many channels that would le altogether from my point. With your permission, I w suppose the root to be in a healthy state, and the pulp-can cleaned out and sweet.

If we intend to put on one of the popular and most gene ally useful forms of crown, viz., a pivot (although why it ev got its name I cannot imagine), all we have to do is to gri down whatever remains of the natural crown with corundu wheels in the engine. If much is standing, it may be w to use the excising-forceps, having first taken the precauti of "nicking" the tooth where we intend to apply the force or we may drill 3 or 4 holes through instead. It is n advisable to use the forceps without some such precautio otherwise a nasty fracture of the root may result in maki it impossible to crown satisfactorily. After we have tak sufficient off—and some operators prefer to leave the posteri aspect standing above the gum margin—we must enlarge t pulp canal to "pin"-wire size, having first measured t length and noted the direction to avoid perforating the ap or walls. If we intend to fit a collar of any sort to the ro the root must be carefully coned, so that as the collar e," it may tighten, and so make a perfect joint. ost important point of all in banded crowns. instruments have been invented to make this ple, but with only partial success.

e most usual way is to use some form of chisel, work, when the part to be coned is under the and when it is above, corundum wheels and very well.

ned just now the most usual crown, in England, the pivot, which, as you know, is used for the ; more especially the incisors and canines of the The making and fixing of this crown is so all that I need not go into details.

m of the same thing is to use a tube tooth t one. This is very satisfactory when the pulp tube of the tooth coincide, but otherwise the to have an elbow in it which is not desirable.

jection may be urged against all the porcelain ost baked in, as for instance the "Logan."

atisfactory crown for incisor and canine teeth ing a gold collar to the usual pivot made either e tooth. The root needs more preparation havd, of course, but when we take into considerapermanent character of the operation I think we it is worth the extra time and labour. Where allow and we can get a suitable tube tooth it in preference to a flat one. These may also be bicuspid teeth making a very artistic piece of

ow to the question of crowning the posterior ind just as many systems all meeting with sup-

sual one is the gold cap crown, and when it is uspid teeth usually has the addition of a porcelain face. For these crowns it is not necessary or advisable to cut down the remaining crown as we did for pivots, unless it is so frail that it would rather be a weakening than a support, but we must so shape it that it shall be conical and cut just free of the bite; of course all decay must be removed. The next stage is to fit the collar, which is usually of 22 carat gold and about 4 Ash gauge; having got this to our satisfaction, and I might just mention that this should always be done in the mouth, we take an impression of the part with this collar in position, a model and bite are then cast from this; the collar will have to be raised if the bite is rather open by the addition of another circle of gold or if the one is sufficiently deep this will be unnecessary. After that a gold masticating surface is struck up of rather heavier plate and soldered on, Ash's No 00 being admirable for all crown work. In the case of a bicuspid, when an all-gold crown would to our English eyes look objectionable, a flat canine or full bicuspid tooth of suitable size and shade is backed and built in. If the crown is likely to have heavy work it may be necessary to make solid cusps, but this is one of those details in which the whole subject abounds, that have to be considered in individual cases and altered accordingly.

Some men advocate the use of seamless gold crowns, but they are so much more troublesome to make that I do not think their advantages are sufficient compensation.

There are various other forms of crowning which I have not had time to mention. Many of them come in for special cases, but these I have mentioned are the most usual, and constitute what we might call routine practice.

Before leaving this subject to go on to Bridge-work I ought to say a little about partial crowns. We sometimes have cases in which either through fracture or caries the cutting edge of an incisor or canine has been lost. Here we can fix a porcelain tip, made either by grinding a flat tooth

tly fit the surface which has been previously
ceive it, backing and soldering this to a plate
ing two dowel pins ; or better by choosing a
h of the right shade and cutting the tip off
, then fitting this to the natural tooth; when that
, two parallel holes are drilled running either
nd into them is fitted a staple of platinum wire
kness of a tooth pin ; the tip is now notched on
ace to accommodate the wire, and this wire is
by the addition of "body" and firing in a gas
this means we have a very perfect method of
rtial porcelain crown. For the description of
am indebted to Mr. Mansell.

vns of gold for the protection of plastic fillings
es, and for the restoration of contour are often
n for any reason a solid metallic filling cannot
ted. The cavity has to be excavated in the
d the edges nicely bevelled ; a model is taken,
contoured with which a metal die is cast, and
or 24 c. gold struck up to cover the contoured
a good holdfast soldered to its inner side, and
the tooth with cement or G. P., the edges of
cap being burnished down on to the margins of
There is a specimen of this in the mouth of one
men present, which I put in about twelve hours

ork. Mr. George Evans, of New York, in his
t work on this subject, gives illustrations of very
lge work, if we can call it such, dating about
. So we see that the idea is hardly new. But
e work has only met with general recognition
1871, Bing, of Paris, applied for a patent in
r an improved means of supporting and secur-
by anchoring with cement clasps or bars,

extending from it into holes formed into the adjoining teeth." His, also, was the idea of making porcelain crowns with lateral pins to be fixed into the adjoining teeth when no stump was standing. By this we see that modern bridge work is really an outcome of crowning. I expect there will be some gentlemen present to-night, who will not agree with me in upholding this branch of dentistry, but I do think it has a field of usefulness, and one that is likely to grow, and that being the case, we cannot afford to shut our eyes to the fact. Of course it will never completely take the place of plate dentures, nor do I think it will become so generally useful or popular, but there *are* cases where it would be better to employ it.

In this, as in Crown work, I cannot give an account of all the systems which are advocated, but I will be content to just mention the more notable ones. The two great divisions of bridge-work are the Fixed and the Removable.

In my opinion *fixed* bridges are only suitable when we have to replace quite a few teeth. The account we see in books and journals of pieces consisting of ten, twelve, and even fourteen teeth fixed on to three or four stumps look very pretty on paper, but I would not care to have one in my mouth. When it comes to replacing such a number, I think we will all agree that an ordinary denture would suit the case better. But supposing we have a mouth in which the crowns of the four upper incisors are absent, and only two of the stumps in position, we might in this case "pivot" the two stumps remaining, and solder what are known as "dummies" to them, thus making a bridge of four incisors, which ought to prove very durable. In cases where a support can only be got at one end of a bridge, some recommend "extension bridges." This necessitates using a "saddle," which is a piece of gold fitting the gum, placed under the posterior tooth.

Removable Bridge-Work was introduced to overcome some of the many objections of the other system. Some of the methods are very ingenious, and are so constructed that in the event of a break they can be removed by the dentist. Others are so made that the patient can take them out for cleaning, etc.

What is known as a "removable plate bridge" is the most universally useful. In this style, as its name implies, a plate is used to span the space and support the artificial teeth between the abutments. These, if stumps of the anterior teeth, are fitted with tubes to form the sockets for split posts, and of course, these tubes must be parallel to one another. If molars or bicuspids are being used as abutments it will be necessary to crown them with one of the gold cap crowns mentioned earlier this evening. These must be made cylindrical, and have a small shoulder on the buccal side. Collars are now made to perfectly fit these crowns, which collars are soldered on to the plate. If the sockets and crowns are all parallel to one another, the piece should slip quite readily into place and be as easily removed. This system, I am sure, might often take the place of an ordinary partial denture fixed with clasps, which cause so much decay no matter how carefully made. Many modifications have been suggested and put into practice, but the principle is the same in all, so I will not go into details.

Another great advantage in removable bridge-work is that artificial gum can be used if necessary, and therefore a more perfect restoration of the facial expression results.

Before leaving this subject, I ought to mention Parmly Brown's method of porcelain and iridio-platinum bridge work. He claims for it special advantages, in that it is made entirely of porcelain with a platinum bar running through as a sustaining shaft, it thus presents a perfect continuity of porcelain surface. It is unaffected by any chemical action or condition in the mouth, and he also says that it is more simple in construction than other methods. It is practically continuous-gum-work applied to bridges, but I see no mention of it being made removable.

Crown and Bridge work is undoubtedly the part of operative dentistry that most taxes our mechanical ability, and again I would point out that it is essential for the successful practice of this branch of our profession that we be thoroughly mechanical both by inclination and training. In this department, where so much is done at the chair-side, and can only be done by the operator himself, he has to do it almost altogether throughout, whereas in ordinary mechanical work a great part can be done by the assistant.

In conclusion, I must thank you for your very kind attention, and hope that you will make up for the many deficiencies by a very animated discussion.

A REPORT ON SCHOOL CHILDREN'S TEETH.

By Percy L. Webster, L.R.C.P., M.R.C.S., L.D.S.

At the request of the Board of Management, I made in October last an examination of the children's mouths in the West London District Schools, at Ashford, near Staines.

At that time I was not aware the British Dental Association's definition of the word "infant," is "all children who have not erupted any of their permanent teeth," and I classed the infants according to the School's division, which is all children of seven years of age and younger. I have

ide only two divisions, boys and girls, without
es.

the interest of the parents to understate their
ges, so that they may be kept at the schools
f cost, I am inclined to think the ages stated
ther reliable.

fined all cases requiring neither filling nor
s Sound Dentitions. Beside these there were
es free from caries, but requiring extraction of
eth.

esting to mention that among the defectively
cuspids, nine out of sixteen teeth were second
ds, or 56·25 per cent.

of defective permanent teeth, is calculated on
ven years and upwards, dating from when the
eth first appear. I may state that one child
e of five years, had a carious permanent tooth,
ne fifty-three children of six years, there were
permanent teeth.

hes are not provided at the Schools, but the
uths, on the average, were clean. To a large
to be attributed to the wholesome, but hard
ne children eat, and their excellent hygienic
rroundings.

ed one or two items to my tables not usually
ious reports, among which may be mentioned:

r of children in which the lateral incisors
e canines in shape.

malities of bite (edge to edge and underhung).

r of permanent teeth in which caries was

tion of the Table of abnormalities and accidents,
tion that both cases of hare-lip were on the
e having been operated upon; one case of

gemination, was a supernumerary tooth geminated to th mesial surface of an abnormally large upper central ; th case of dilaceration was in an upper lateral, the crown a right angles with the root, the cutting edge pointing towar the fauces.

TABLE I.

	Boys	Girls	Tota
	479	305	784
Temporary Teeth—			
A. *Carious* Not requiring filling	593	317	910
B. ,, Requiring extraction	510	353	863
Permanent Teeth—			
C. Carious, savable	355	236	591
D. Teeth lost	25	16	41
E. Teeth condemned	131	99	230
Sound Dentitions—			
(a) Temporary	17	13	30
(b) Transitional	26	16	42
(c) Permanent	15	6	21
Irregularities	63	29	92
Caries arrested in Permanent Teeth	31	25	56

TABLE II.

n, e hs.	No. of Defective in Permanent Teeth.	Ratio for 100 children.	Summary	Classification.
	0	49·4	49·4	Good
	1	16·5	46.0	Fair
	2	12·8		
	3	8·2		
	4	8·4		
	5	2·3	3·9	Bad
	6	·76		
	7	·76		
	8	·15		
	9	·45	·4	Very bad

TABLE III.

Abnormalities and Accidents.

ycombed	...	No. of children.	47
ured Teeth	...	No. of cases.	11
la opening in mouth		...	13
la opening on chin ...		...	1
rnumerary Teeth	...	...	4
ctively developed bicuspids		...	16
-lip ...	...	...	2
nation	...	...	3
niform laterals	...	...	4
eration	...	...	1
to edge Bite	...	...	2
erhung bite	..	...	2

* 9 out of total were in boys.

HYGIENIC DISABILITIES.

By W. R. Tuck, L.D.S. Eng.

We are constantly startled by hearing of some sudden an mysterious death, which necessitates enquiry by means of Coroner's inquest. A jury is impanelled, witnesses ar subpœnaed, and a doctor's presence is required to give hi opinion on the matter, which is mostly summed up in th following words: "Failure of the heart's action." So th jury give their verdict accordingly. This, however, ha always appeared to me vague and unsatisfactory, and I canno but regard it as the height of folly, to call together a tribuna which usually is so little acquainted with scientific knowledge as to be utterly incapable of tracing effect to its true cause.

The public surely do not require to be informed that deat resulted because the heart ceased to pulsate; what nonsens this would seem! I have no doubt whatever, that if thes gentlemen of the jury possessed but a small acquaintance wit chemical laws, and toxological research, the true issue woul soon be apparent.

I am referring to investigations of this sort which occu more especially in country places; doubtless in large town more intelligence and searching examinations may be readil instituted. For many years past, I have carefully soug information on most cases which have come under my notic and conclude it would not be difficult to prove that a larg number of such fatalities result from poisoning, the chief agent being mostly Carbonic Oxide, Carbonic Acid and Sulphuretted Hydrogen.

I have recently met with a singular and interesting cas which, but for timely interference, would certainly have ha ation. I was asked to see a lady who had been a violent neuralgic attack; she was confined to id her medical man had been in attendance for several remedies were successively tried in vain, t last suggested that the embedded fragment of a be the cause of the mischief; on examination, t a vestige could be discovered. Artificial den-een used by her for a considerable time, which ed much to her comfort; in the present instance o mechanical irritation whatever, nor excoriation to account for her suffering. The gums presented cyanotic appearance; I therefore advised the use two, which were effectively applied and afforded relief for the time. The pain, however, returned sed violence, if possible; I was again summoned, mmenced exploration in another direction, in the scovering the etiology of this terrible malady. I my patient was in temporary lodgings, awaiting ion of a house then in course of erection; I noticed droom occupied by herself and her husband was et square, giving, perhaps, a breathing capacity of undred cubic feet; this certainly, with proper ven-s not much to complain of. My attention was the bed, which was of very ancient construction, is known as a "Four-poster" with damask cur-letely surrounding it. I asked for the sake of formation, whether the room was found to be the answer was as I expected, "That it was so at that they had been obliged to make both doors and npervious to the air; the flue of the chimney had losed. In this condition were two highly respect-herwise intelligent people, though utterly ignorant plest Hygienic laws, gradually but effectually themselves by engendering and inhaling a noxious atmosphere, charged probably with not less than ten per cent. of Carbonic Acid.

The sad state of things was especially evidenced in the case of the lady, whose face was flushed. and the gums as before described, though the husband did not go unscathed. I pointed out the dangers to which they had been subjected, and the folly of medical treatment under the circumstances, and at the same time advised the opening of the chimney without delay, and on no account to sleep in the room a single night until that had been done. My advice was immediately acted upon, and good results followed in the course of a few days.

I have not the slightest doubt that a little further indulgence in this Lethal chamber would have terminated their existence.

Since writing the foregoing, I have been called on by a young man whose business was that of a biscuit maker; he asked my advice respecting a painful affection of the lower teeth. On examination no caries could be detected; there was an abrasion of the enamel on the buccal surface of the lower molars on each side. I applied a strong solution of zinc chloride with a camel-hair brush, which gave him some relief, notwithstanding this, I saw plainly enough that the cure had to be sought for in another direction. This person looked anæmic in appearance, and on enquiry I found that the place in which he worked was a small, and over-heated room, containing ovens, furnaces, etc., so that all the vital principle of the air would soon be absorbed, leaving an atmosphere charged with poisonous matter. I explained the nature of his case, and advised him to find occupation where he could have a purer breathing medium. I cannot but think that many of these manifestations on the teeth surface are caused by a general enfeeblement affecting the secretive

ich become acid by reaction. There is unques-
ch widespread ignorance respecting the most
vhich govern life, and this ignorance greatly
an suffering.

of these views, I have mentioned the preceding
are uppermost in my mind; others, however,
rded *ad infinitum*, in fact there is nothing
s this mortal frame that is not liable to rouse
e latent enemy, often producing such dire effects
e highest medical authorities.

from my record two or three other examples to
v singularly remote effects are oftentimes

niddle-aged gentleman, who had been confined
r some time, with one of those terrible attacks,
gly treated for it, sent for me. On my entering
ound him sitting before a large fire heavily
On remarking that I was sorry to see him in
is reply was that he had been so afflicted for
l that two doctors had previously seen him. I
hat his face was disfigured by large blotches
e last stages of small-pox. I enquired "What
ical men say is the nature of your disease?"
vague; he said he had been taking tonics. I
nmoned especially because of agonising troubles
. He assured me, in the course of conversa-
would rather have all his teeth extracted, than
s he had during the past two or three nights,
ept a moment except when placing his fingers
teeth. I found the teeth dull on percussion,
acute inflammation in the surrounding perios-
over, I intimated that his case seemed one of
ng, and on enquiry elicited from him that the
been drinking came from a very questionable

source. I asked him if he wished me to see one of hi medical advisers, and consult him as to the course of treatment, but he negatived that suggestion, saying he wished t leave himself unreservedly in my hands. I immediatel urged on him the necessity of obtaining his drinking wate from another supply, and advised the use of medicine composed of Potass. Bicarb. and small doses of aconite. Thi appeared to act with magical effect, as in one week he wa able to leave his room, and suffered no more from th malady.

The next patient was a lady who came to see me from distance. She had suffered greatly for several weeks from violent neuralgic attack; her husband accompanied he On making my diagnosis I found the upper teeth, in whic she appeared to suffer most, free from caries, somewhat du on percussion, and elongated by reason of the loss of th opposing teeth in the lower; the gum was much tumefie Her appearance was anxious and her face flushed. O enquiry, she gave me no unfavourable account of her gener health. I advised the application of two or three leeches t the gum, which gave considerable relief. The pain, however, after a short time, returned again. I recommende calling in a doctor for consultation, and he elicited the fac that there was some disturbing influence at work, whic proved to be that of amenorrhœa. A powerful dose quinine was prescribed in combination with a sedative, an the next morning we had the satisfaction to hear that th desired end had been achieved, and that the patient wa perfectly free from pain.

Another case which afforded me much interest was presented to my notice some little time after, and was that a middle-aged lady who came complaining of great tortur in her teeth generally. I found many of them abrade others carious, and all so tender as not to permit of th

ich without causing great suffering. Having
iat she had been under medical treatment, she
hat I would speak to her doctor respecting the
mouth. This I did, and was informed that he
ating her for diabetes ; and he told me what had
ibed for her. Meanwhile I dressed the teeth in
possible under the circumstances, and in a few
enabled to fill some of them with a non-metallic
t the same time advised waiting till the excess
ness had abated. In about two months I was
complete my operations. This case manifestly
the secretions had become chemically altered
ed most prejudicially on the teeth organs.

case was that of a youth aged about 17 or 18,
ust returned from school. He looked the very
ealth, and yet suffered so excruciatingly in his
he had been unable to sleep but little for a continue.

er may imagine my surprise on examining his
find a a vestige of disease. I explained that this
s probably of a reflex character and had arisen
cure cause ; among other questions I asked him
y secretions showed any signs of calculi, assum-
e kidneys were at fault ; otherwise I could not
his suffering at that time. On his leaving, I
im to call again in a few days, but, to my surprise,
been gone many hours before he was again
and intimated that he wished to speak with me
I was not by any means prepared to hear his
He commenced by saying he had not compre-
previous questioning, and that he had thought
better call again and fully explain. The nature
fession obliged me to advise him to see a doctor
.

This case is so unique that I had never met with anything of the sort before in my long years of active practice, nor have I seen any reference made to it in the press, although I am sorry to be obliged to think that this is not an isolated instance. I am not sufficiently advanced in physiology to see the exact action upon the Dental Economy to account for the symptoms which brought him to me.

THE GENERAL MEDICAL COUNCIL.—The Executive Committee will meet on the 22nd inst; and the Session of the Council itself will commence on the following day. It is believed that matters of much importance are to be brought forward, and that a number of penal cases will be considered at an early part of the sitting. A report by the visitors and inspector appointed by the Council in connection with examinations will be presented; and the Committees on Education and on Examinations will also report, the question of preliminary education being probably dealt with.

MERCURIAL SALIVATION.—In another part of the Journal we abstract the report of an extremely interesting case of of dental periostitis which in the opinion of the doctor and dentist attending the patient, arose from mercurial poisoning. The gradual absorption of the drug, it is thought, was brought about by the use of a cosmetic lotion. The *British Medical Journal* not only publishes a leading article upon the circumstances, but also the patient's statement as to who provided her with the suspected poison. Five minutes consultation, a two-guinea fee, and a package by parcel-post the next day, are the details.

In one of the most distressing cases of salivation which we remember to have seen, we were able finally to trace the cause to the persistency with which a husband had dosed his wife with homœopathic pilules.

Journal of Dental Science.

LONDON, MAY 15th, 1893.

IE ADULTERATION OF FOOD.

gradual march of civilization it seems not
hat we are apt to overlook the dangers which
ome of the supposed advantages conferred by
ing power to control his environment. We
e that our pre-historic ancestor was not so
ned with a choice in his food-stuffs, as in the
quirement of a sufficient quantity. Now we
l all that; but the desire for, and appreciation
nd physical comforts seem to bring a Nemesis
. The evolution of the mental side of the ner-
may be accountable for a demand for variety,
stion as to whether excessive refinements in
sary in order to allow of increased intellectual
ay, perhaps, for the moment, leave to be decided
iet (who may need some such excuse), or by the
. It would, however, appear certain that con-
n the knowledge which renders possible such
as improved sanitation and immunity from
bring, we still have sufficient ignorance upon
ryday,matters of life to account for much trouble
oidable.

re occasionally reminded, and oftentimes com-
e information to others, that the whole-meal
ner days had dental advantages in more respects
t furnished the necessary lime salts during the

development of the teeth, and, in after years, provided a proper material upon which the function of true mastication could be performed. Since it has become fashionable to use white bread (the extent to which modern cooking is carried also assisting to a softened diet), Nature is discovering that it is difficult, if not unnecessary, to provide an organ which is either not required by the economy or which can be artificially supplied by the dentist. If we had been content merely to lose our lime salts and our teeth, matters might have arranged themselves, but in our anxiety to have white bread it seems we may be running risks that we know not of. To supply a demand, "baking powders" are introduced and some of these, besides other ingredients, contain alum to render the bread porous and of a good colour. That it serves its purpose may be admitted, but the question has recently been argued whether alum may not have an injurious effect when taken into the stomach. *The Lancet*, last year, referred to the action of alumina when precipitated in the presence of soluble nitrogenous matters. It renders them insoluble. Further than this, it combines with soluble phosphates to form insoluble phosphates of alumina; and the food value of the "staff of life" must be reduced very materially by rendering both the nutritious and bone-forming constituents in it insoluble and indigestible. *The Lancet* points out that when a baker uses alum in his bread or flour proceedings are successfully taken against him under the Food and Drugs Act, and it is reasonable to expect that the same Act should protect the purchaser against alum introduced into his bread in any other form, not excepting that of a baking-powder. In an article on the action of Alum upon the nervous system, the *British Medical Journal* alludes to nervous diseases caused by inorganic substances, as in lead palsy and mercurial tremor. The experiments of PAUL SIEM are quoted to show that the administration of a soluble salt of alum in the case of dogs, cats and rabbits, produces a similar train of symptoms to that recognised in man under the name of acute bulbar paralysis. The cause less disease in man is at present unknown, and uch observation may be necessary in order to ether continued absorption of alum may account ttempt is well worth a trial.

ve days' hearing the Magistrates at a Quarter cently confirmed a conviction for selling an ing powder. An army of expert witnesses each side, and as it seems that the case is to the Court of Appeal, our judgment must be We have, however, placed before our readers induce them to watch the result with that case commands. This question of food adultera- s all individually, and our race collectively. A recently sent us is surely a sign of the times. It devoted to the suppression of adulteration, and ort as the only newspaper in the United Kingdom s itself with the purity of our food supply. It interesting reading, and the boldness of its re- nnection with exhaustive analyses of proprietary t cause a sensation, even if there are no actions

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R TOMBSTONE.—A medical man recently brought gainst the executor of one of his patients, to balance of account for professional attendance. ccount was first rendered, the solicitor asked for h the plaintiff forgot to send. After paying all ere was a balance of £17 which, in accordance stamentary arrangements of the deceased, had ed in the purchase of a tombstone. The judge his experience medical men did not give parti- rendering an account, as it was considered *infra* o. He held that the plaintiff's claim was good, the executors had funds in hand when the claim ade, the verdict would be against the executors

MEDICAL GRADUATES IN THE UNITED STATES.—T *Lancet* recently noticed the fact that over four thousa graduates were turned out by the medical schools in t United States after an education which in many cases not exceed eighteen months in duration. According to correspondent in the *Medical Age* a large proportion of th graduates do not remain in the profession. He traced a hu dred of his friends, especially in the first five years, a found that seventy-five had to resort to other employme Three were insurance agents, four "loaned money," a others went in for farming, sawing wood, and selling pat medicines and other drugs. Only 29 graduates out of 1 restricted themselves to medicine, of whom 11 associa themselves with other practitioners and in some ca succeeded to their practice.

THE LONDON AND COUNTIES MEDICAL PROTECT SOCIETY.—At a recent meeting of the Council of this Soci 130 new members were elected. Amongst other matt reported by the secretaries, we notice that two dentists h been warned to cease using the title "Dr." to which th were not entitled, and that they forthwith agreed to do so

BISMARCKIAN HUMOUR.—It seems that some Germ students are encouraged to jot down their daily thoughts a impressions; and from a notebook thus filled by Bismar at the age of twenty, the following has recently be quoted :—

"The spectacle of a dentist suffering with an achi molar is rare but consolatory. It is a sight which is, perha vouchsafed to us but once in a lifetime; but its cha remains with us for long years."

One wonders whether the private experience whi prompted this comforting ebullition arose in connection w an erupting wisdom tooth, or from neglected first or seco molars.

ts of British & Foreign Journals.

OF ACUTE PERIOSTITIS OF THE JAW FROM MERCURIAL POISONING.

. C. Staveley, F.R.C.S.Eng., L.R.C.P. Lond.
Denison Pedley, L.D.S., F.R.C.S. Edin.

Medical Report by Mr. Staveley.

widow, aged 31, had had fairly good general recently. She had had a good deal of worry from rs in connection with her late husband's affairs. d occasionally from muscular rheumatism.

ulted me for the first time on December 23rd, laining of general nervousness, tremors of the ility to sleep, and almost complete want of appetite. ted her condition to two boils which had formed t arm. One of these was well, the other had been was healing. She had also some facial neuralgia. nia appeared regularly every three weeks. The d twice daily. She was a tall spare woman. There l pallor of the face, but not much anæmia of the mbranes. The tongue was thickly coated and the sive. Teeth had been recently filled, and she was of visiting her dentist every six months.

ted her condition to insufficient food, and prescribed diet and the following mixture: Ferr. et quin. cit. . nuc. vom. mx, aq. chloroform. ℥j., t. d. s.

mber 26th she sent for me, as the neuralgia had evere. The breath was very offensive, the gums d there was much creamy fur about the teeth. I to visit her dentist if the pain did not subside, bed pulv. phenacetin, gr. 5, to be repeated in half ime if necessary.

mber 27th I received a note from Mr. R. Denison p.m., saying that the patient had been to see him e had extracted two teeth to relieve pain. He that the condition of the mouth was due to some bably septic. I saw Mrs. K. the same evening, the teeth on the right side of the mouth all loose, pus welling up from the sockets; the breath was most offensive, and there was a profuse flow of saliva. The temperature was 100°.

On December 28th she was somewhat relieved; the temperature was 99°. A chlorine mouth wash was ordered to be used frequently.

On January 2nd, 1893, there was still much discharge, and great pain in the second (?) lower molar; pus was still welling up from the tooth sockets. At 5 p.m. I met Mr. Pedley in consultation. She was then free from pain, and we decided to wait. We discussed the question of poison for some time, but could discover no source. We were both much perplexed as to the cause. She continued under my treatment until the end of January. Abscesses formed at the roots of two other teeth, with great pain, necessitating their removal. All the teeth extracted were carefully examined, and the pulps found to be healthy.

On February 4th the patient's sister informed me for the first time that the patient had been using a lotion for her complexion since the beginning of October, 1892, and left a bottle of it at my house. On examining it I found it contained mercury, apparently in large quantities. I did not attempt to estimate it quantitatively. I left this bottle at the office of the British Medical Association on February 14th, 1893.

DENTAL REPORT BY MR. PEDLEY.

The following is the dental report from notes taken at the time or the day after:

December 27th, 1892, Mrs. K., aged about 30, came today with her sister about 4 p.m. Complains of constant pain in upper and lower jaw on the right side; has kept her awake at night for nearly a week. Says she hardly knows how to bear the pain; it is acute or throbbing. On examination patient can scarcely open her mouth. The breath is very offensive. From the mid line in upper and lower jaws on right side, as far as the wisdom teeth, the gums are inflamed and thickened. The teeth are all loose, and on pressing the gum pus oozes out round the necks of the teeth. The molar teeth in upper and lower jaw on right side are acutely sensitive when pressed upon. Patient fainted twice during the examination. Decided to remove a molar tooth in upper and lower jaw on right side, the most sensitive.

ide administered. Upper twelve years' molar and
dom tooth removed on the right side. Patient
ch relieved. Teeth not carious. Teeth carefully
fter extraction. The upper molar had been pre-
pped on the posterior surface, but there was no
supposing that the nerve pulp was irritated. The
was much inflamed and thickened. On cutting
pen the pulps were healthy in appearance.

er 29th, 1892. The father of Mrs. K. came to-
ked if I would visit Mrs. K., as she was too ill to
Went at 3 p.m. Mouth in same condition as
much relieved by extraction. Looks very ill, and
weak.

23rd, 1893. Mrs. K. came this afternoon.
on of upper and lower jaw seems to have spread to
e. The teeth are sensitive and loose. A lower
oth on left side, acutely sensitive, and, although
the patient complains of constant pain. Nitrous
nistered; tooth extracted. Periosteum very much
and deeply congested. On cutting it open, the
was apparently quite healthy.

25th, 1893. Mrs. K. came this afternoon. Pus
out round necks of teeth; there is a slight im-
; breath still offensive. Right lower molar
nsitive and very loose; extracted under gas.
inflamed and thickened; nerve pulp seems quite
Patient complains of great pain, but can open her
le wider.

17th, 1893. Mrs. K. came to-day. Mouth
pain; breath sweet; teeth much tighter; took
pper and lower jaw.

.— Mrs. K. has periodically consulted me with
her teeth during the past two years. I have
arded her as a healthy woman with a healthy
he symptoms point to a general inflammation of
which the teeth were secondarily affected. The
extracted as the readiest means of relieving
by so doing the patient has been probably saved
is of the jaws. The sudden onset, the condition
h, gums, and teeth, the fœtor of breath, the whole
act, points clearly to poisoning by mercury, and
ve it to be. During the past fourteen years I
any cases both in hospital and private practice,

but in all my experience I have never seen a patient suffer such intolerable and persistent pain.

REMARKS BY MR. STAVELEY.—I am of opinion that the case was one of mercurial poisoning, and that it was only by relieving tension by removing the teeth that the patient escaped necrosis of the jaw. I have failed to discover any other way that the patient could have absorbed mercury except by the lotion. I feel convinced that the lotion was the cause of the illness.

The British Medical Journal.

CAUSTIC PYROZONE.

By RODRIGUES OTTOLENGUI, M.D.S., New York, N.Y.

In my opinion, the ethereal solution of hydrogen peroxide known as caustic pyrozone will very shortly be considered one of the most valuable topical drugs in the medicine cabinet of the dentist. From my experience with it in a number of cases I am satisfied that for several purposes it supersedes anything previously at our command. Its chief employment, of course, must be upon pus-generating surfaces or tissues. Of these, it will be more welcome in the pockets of pyorrhea alveolaris than in abscesses or other pus-yielding diseases, though useful in all.

Its most marked and valuable characteristic is its affinity for pus. Brought into contact with it, there results a bubbling and rushing forth of the pus which will astonish those who see it for the first time. We are often led to suppose that pyorrhea has not yet attacked a specified tooth, because pressure will not force an escape of pus around the neck. I am satisfied now that many such seemingly healthy individual teeth, in diseased mouths, are affected, for I have been amazed to observe the free flow of pus in such cases immediately upon the application of caustic pyrozone.

From my experience I may offer a few suggestions to those who essay to use this drug. The first caution is as to quantity. A little will do all the good possible, while more will be harmful. The application is painful, producing what the patient will call a burning sensation. It will, however, be less painful applied to diseased surfaces than if placed upon healthy tissues. For this reason, and because the cauterizing of the healthy

esirable, care should be taken that the cotton rope
is not so saturated that when pressed into the
stula the excess will be forced out and escape upon
than those that are generating pus. If this should
will follow, which may be quickly relieved by
ely with tannin and glycerol. Another objection
ng the agent to reach the healthy surface of the
it will produce an ugly white stain. Whether this
char or not, I am in doubt. The eschar caused by
id, salicylic acid, and other escharotics results in
nd exfoliation of the surface of the soft tissues.
not seem to occur with pyrozone. I accidentally
e upon my fingers and afterwards washed my hands,
within a few minutes, there appeared a chalky
, quite ugly in appearance. I feared that there
slough and a sore finger, but to my utter astonish-
I reached home it had entirely disappeared, the
g as perfect as though no caustic had reached it.
to some experiments, the result of which I will
nediately after placing a drop of caustic pyrozone
nger a rapid evaporation is visible, with a sensation
If the cuticle is broken, the pain will be great.
ouched, in about twenty minutes a whitish stain
o appear, increasing slightly, till in half an hour it
tinctly visible. This stain will slowly disappear,
ntirely in three hours without medication of any
owever, an effort be made to wash the caustic from
the stain will appear within ten minutes thereafter,
of intense whiteness and very conspicuous. The
be scraped off, and the stain will be found not to
ated beyond; but this cuticle will be seen, by the
-glass, to be thoroughly stained throughout. Never-
undisturbed, this stain though deeper than that
water has not reached the part, will all disappear
n three to four hours. If gloves are worn or the
ed in the pocket, the stains pass away within one

ion from this is that any excess of pyrozone should
with bibulous paper and the application of water
think that the water simply softens the surface of
allowing a deeper penetration.

The Dental C

A CASE OF TRIGEMINAL NEURALGIA.

By Dr. F. Schneiger, Erlangen.

Conrad Schrems, from Vach, aged 26, had been suffering since August, 1892, from trigeminal neuralgia, according to the diagnosis of Dr. B. The cause was not clear. The following were the symptoms. A stabbing pain about the jaw, which could not be localised, recurred from three to five times during the day and lasted from three to six minutes. The same painful phenomena appeared during the night, sometimes five or six times, of similar duration and intensity, so that the patient was considerably disturbed in his night's rest, and his general health was thereby injured. All the medicines employed proved in vain, and the nocturnal pain could only be lessened by morphia and the production of artificial sleep. Dr. B. finally directed the patient to the dental policlinic at Erlangen where he presented himself on January 25th. A preliminary examination of the mouth furnished almost negative evidence, for the patient's teeth appeared in faultless condition. Indeed, unless one could refer the neuralgia to a swelling of the inter-dental papilla which existed, it seemed necessary to look for the cause in some distant region. I could not, however, free myself from the thought that the origin of this neuralgia must be sought for in the oral cavity; and expressed the view to the students that perhaps rather than refer it to the swollen papilla, it might be found in connection with a temporary molar still remaining in the lower jaw, in which case there would probably be a chronic pulpitis to account for the symptoms. The recognition of the temporary molar was tolerably difficult, as its form deviated as little from the other molar as did its colour. I noticed the existence of the milk molar through the absence of the second bicuspid. The treatment could only be directed towards the two above mentioned points.

The swelling of the inter-dental papilla was treated with the thermo-cautery; and the milk molar, which was still firm, was extracted. It showed an inflamed and thickened periosteum on the roots, and there were some evidences of absorption. As the symptoms had already existed six months, we could not prophesy that our treatment would produce a cure, and the patient was directed to report himself at the surgical clinic. On the following day, January 26th, Professor Heineck could confirm the representations of the patient, that all symptoms of trigeminal neuralgia had vanished, and on the next day the patient was dismissed as cured.

In the above case we have to do with a true trigeminal neuralgia, in which pain was transferred from the third to the first and second branches. If we consider that the mischief began in the third branch, and then radiated, it seems wonderful that no motor disturbance was observed, although that branch has both sensory and motor fibres. Perhaps this was due to the independent origin of the motor root.

If we agree that the whole nerve is usually painful in such neuralgia, our present case does not confirm this, for neither in the supra-orbital fissure, nor the infra-orbital and mental foramina, the three so-called painful points of the Fifth, was pain produced on pressure. When we consider that neuralgia of the face belongs to those horribly painful affections which drive the sufferer to morphia, amongst other things even to suicide, it is legitimate to wish that all cases should be made public in which diagnosis is aided, and which help to prove that a large number of them may be traced back to local diseases, and to the teeth. For it is hardly too much to assert that in most cases the cause should be sought for there, and if this finds increased corroboration, the treatment will become easier and simpler. In the above case the diagnosis was difficult. All the teeth were tolerably well cared for, and did not show the least trace of caries, consequently disease of the pulp was not in one's mind. All the teeth stood firm in the alveolar sockets excluding in this way a periostitis, and the patient had never had localised pain. It was not surprising that we at first imputed a local trouble to the swelling of the inter-dental papilla, but the thought that the neuralgia had existed for six months, that is longer than the swelling, made it doubtful; and the presence of the milk tooth suggested a chronic periostitis as an occasional cause. The report as to the condition of the root membrane after extraction, and the complete cessation of the neuralgia, confirm the accuracy of the diagnosis and treatment.

Deutsche Monatsschrift für Zahnheilkunde.

IMMEDIATE ROOT FILLING.

By C. H. Stearns, D.D.S.

Consider, first, a case where the pulp has been removed by devitalization. The condition here will be simply an open canal at the apex of which will be a minute unhealed surface, corresponding in size with the apical foramen where the line of demarcation was set up and the slough finally took place.

Now what does this condition require for its proper treatment? First, that the septic influence be removed from the stump of the pulp, or rather the unhealed surface at the apex of the canal. Second, that it be covered by some impervious substance placed immediately in contact with it. Neither of these alone is sufficient, but both together are an absolute guarantee of success no matter how they are obtained. These being all that is required, it is obvious that the sooner they are obtained the better. The man who treats a root six weeks before filling will be successful if he obtains these conditions at the end of his treatment, and the man who fills it immediately will also be successful and have this advantage that he has shut the door to his foes immediately and has done it when everything was in his favour. In a word, he has acted at a time when he has nothing to gain and everything to lose, as, at the best, after any treatment, he can only have the conditions which he already had at the start, *it is impossible for this tract to heal*; it can only be closed by a growth of the cementum which takes place,making a mechanical closure, and this not only requires some little time but perfect immunity from disturbances. In cases where the pulp has simply been torn out, either with a broach or other means, the condition is the same except, perhaps, less congestion at the apex, and, therefore, the proper conditions are more easily obtained.

Let us next consider a case which we often meet—one where the pulp has been dead for some time, but is not giving trouble. These cases, I think, we all approach in the same manner we would a powder magazine, and with good reason as so many can testify. Let us see what the conditions are. The canal is filled with most intensely poisonous matter. The apex is either closed by the growth of the cementum or protected in some manner from the effect of this matter, depending largely on the length of time since the death of the pulp. It is apparent that to render the condition here the same as

rst case, we have simply to clean the canal with-
ny of the septic matter contained therein through
amen ; or if the foramen be closed, without open-
er said than done is the reply. I think if we are
ul to have the rubber dam in place and see that
ept flooded with some powerful antiseptic while
process is going on, at the same time using proper
nt penetration beyond the foramen, we will very
to combat after-complications.

case will be one which presents the well-known
blind abscess. In this we have the same, or
me conditions as before, with the addition of an
ed by the septic matter contained in the canal
the tissues beyond, and in addition to the other
ntioned we have this to remedy. How shall we
n abscess of that size was situated in almost any
of the system, you would say evacuate it and
one. Why not do that here? Simply evacuate,
re not satisfied, pass a fine broach through the
give it a good bleeding. The blood will wash
nd, if it does not collapse of its own accord, will
filling it—this, if protected, soon becoming
ickly ends the trouble. The only thing to guard
cularly is in cases of long standing in which we
d the root at the apex badly eaten away. If this
othing will save it unless we resort to replanta-

cess opens on the gum it only simplifies matters
by immediately closing the foramen you convert
n wound, which, if kept open with a tent for a
l close without further trouble.

The Dental Review.

FILLING TEETH WITH GOLD.

By E. H. Eidt., D.D.S., Ont.

ity in the distal surface of a right superior cen-
The teeth being close together, as perfect fillings
de where the space is very slight, the first thing,
t must occupy our attention is to get plenty of

space. Several methods to accomplish this are advanced, but the author's experience has been that absorbent cotton is the most satisfactory to both patient and dentist. The cotton should be made into a rope, and packed tightly between the teeth, and left there, at least, twenty-four hours. Where the teeth are very firm, two applications may be necessary.

Having obtained the necessary space, we are ready for the operation. Apply the rubber dam, exposing four teeth—the two centrals and the right lateral and cuspid. With a sharp, strong chisel, and a spear shaped burr, the enamel is cut away, well on the labial side, to have a good view of the work, and to expose the filling sufficiently to show what it is. If a gold filling is not sufficiently exposed, and left in a shadow, it will look no better than an amalgam filling, as the surface will appear black. Trim the lingual side down to a smooth, strong edge. The points of the cavity, cervical and cutting, are shaped with a burr or other suitable instrument. The cavity is grooved all around with a sharp burr. Distinct labio and palatal gingival extensions are necessary. They will serve for both retaining pits and starting points. The edges of the cavity are now polished with fine sandpaper strips or corundum point, the dust blown out and the cavity is ready for filling. For commencement and lining the walls of the cavity, Watts' crystal gold is used, on account of its more perfect adaptability in small places (lying still where placed), and cohesive qualities. A pellet of this gold, small enough to enter into the cavity easily, is taken, passed through the flame of a spirit lamp, and with a small slightly serrated plugger, packed into the commencement point and firmly lodged with hand pressure. In regular order from the starting point, each piece of gold is added with small pointed instruments, until the pits and undercuts are filled and the cavity lined.

To complete the operation, No 4 cohesive gold foil, 1,000 fine, is used. Divide the sheets in thirds in this wise; a sheet is moved one-third out of the book; the book is then closed to hold the sheet, and the piece is torn off the way a piece of paper is torn on the sharp corner of a desk or table. These strips are then loosely rolled into ropes, and cut into pellets suitable to the case.

As the pellets are taken up, they are passed two or three times through the flame of a spirit lamp, bringing them up to a red heat each time. To pack and condense, the automatic mallet is employed, using at first a light blow, then a medium,

aken not to mallet directly against the enamel
always letting a pellet of gold precede the fine
oint, which pellet of gold should be malletted
preceding piece or pieces until the filling is flush
margins of the cavity. With a foot plugger
pieces are malleted on, running the gold over the
gin, so that when the filling is dressed down, there
in film of gold over the margin, which will prevent
rom getting between the filling and the margin.
ng, a medium grade disk is used for taking off the
d, followed by one made from the finest pouncing-
is will produce a good polish. Nevertheless, a
re should be attained by the use of a strip of
ll chalked. For this, the best material is what is
whiting."

Dominion Dental Journal.

Reports of Societies.

LOGICAL SOCIETY OF GREAT BRITAIN.

Monthly Meeting, April 10th, 1893. Mr. Bowman
.D.S., President, in the chair.
ntes of the previous meeting were read and con-

wing signed the Obligation Book and were formally
s members:—Messrs. W. T. Trollope, C. F. P.
ard J. Preedy, Ernest Gardner.
sident announced that he had received obligation
signed, from the following gentlemen :
D.P., of Brighton.
n, W. H., of Exeter.
I. Curling, of Guildford.
G. W., of Harrogate.
Harold, of Brighton.
Ernest, of Ventnor.
clared them admitted as Non-Resident Members of
.

Mr. Frederick William Richards, L.D.S., Eng., of 27 Par dise Street, Birmingham, was elected a Non-Reside Member.

The Librarian reported that he had received since the l meeting, in addition to the usual journals and periodicals, (*the Transactions of the Seventh International Congress Hygiene and Demography*, (2) *the Transactions of t Medical Society of London for* 1892, (3) "Les Accider de la Premiere Dentition," by P. Poinsot, presented by t author.

The Curator said a photograph had just been placed in l hands by Mr. Sidney Spokes, it was of a schoolboy w exhibited asymmetry of the cranium and jaws.

Mr. R. H. WOODHOUSE, with reference to the photograp thought it would be interesting to obtain some history of t case; it occurred to him that the head might have be injured by the use of forceps at the time of birth, and so pr duced this peculiar conformation of the head.

The PRESIDENT then announced that the evening was to devoted entirely to Casual Communications.

Mr. R. H. WOODHOUSE on a case of Amputation of a Later Incisor Root for the cure of a Chronic Abscess.

The patient, a lady aged 33 years, had a right upper later incisor which had been dead for many years, and the can filled; there was a chronic abscess over the apex, and eve attempt to relieve this met with but partial success.

The tooth being valuable, he decided to remove a porti of the root in the neighbourhood of the abscess. The sin was enlarged by dressing with cotton wool and carbolic ac when the upper portion of the fang could be distinctly fe After opening the sinus he passed a German fissure bur i and felt for the portion of the root where the periosteum w still adherent; having determined this as near as possible, proceeded to cut off the apex, which fell back into the absce cavity; the cavity was then washed out and dressed three four times with iodine liniment. He saw the patient thr weeks after the operation and the wound had healed up co pletely, leaving only a little dimple on the gum. He h recently seen the patient again—nine months after the oper tion—and the parts were quite healed. On very close exa

e could only find a very fine sinus, but one that
inconvenience whatever. Some gentlemen might
he best treatment would have been to remove the
off the apex, and then replace it, but he preferred
roic course. He had with him the amputated end
g, and it seemed surprising that so small a portion
se such discomfort and so large an amount of pus.
like to add that the canal had been filled some years
lic acid and oxide of zinc, so that there was no fur-
to be obtained from dressing the root: the only
n, therefore was to amputate the apex of the root,
uld feel inclined to treat similar cases in like manner.
liniment was four and a half times as strong as the
nd he found it very useful for dead teeth as well as
scesses.

RNOCK had a case in which the treatment was some-
ar to Mr. Woodhouse's, the cause, however, being
He had been unable to completely devitalize the
second upper bicuspid, and repeated the dressings
to time to no purpose; at last the patient got tired
l the tooth extracted. On thinking the case over,
the conclusion that there must be a small curva-
end of the root which prevented him from devital-
vhole of the pulp, and therefore consented to take the
on condition that he might replace it. On extract-
th the suspected curvature was found; holding the
napkin saturated with carbolised glycerine, he cut
ked portion, filled the cavity and canal, and replaced
which did well almost immediately.

seen the patient several times during the past eight
the tooth was still in good order. Perhaps one of
remarkable features of the case was that the osteo
put in was almost as perfect as the day it was done

NNINGHAM observed that amputation of the end of
such cases as these was not altogether a new
and that he had seen numerous successful cases
is own practice and in that of others, in most
vithout even the very minute fistula alluded to in
under discussion. Notwithstanding considerable
he could not lay claim, as Mr. Woodhouse had
be able to distinguish by touch when he had
he area where the tissues were quite normal.
thought there was a good deal of haphazard in

amputating the end of the root, and would give an illustration of a case. He remembered a troublesome chronic fistula from a lower molar, which had not yielded to the usual methods of treatment; he therefore determined to break up or remove through the alveolus the necrosed end of the root. Having by a probe traced the fistula to what he took to be the vicinity of the apex of the anterior root, he proceeded in heroic fashion to bur out the diseased part through the gum.

The treatment was only palliative, and after a time the abscess recurred in an acute form, when he finally resorted to the remaining alternative—extraction and replantation. On removal of the tooth he examined the roots (which were of extraordinary length) with a little curiosity, and found that instead of having amputated the end of the root, that he had excavated a part of the root about half way between the neck of the tooth and the apex. He cut away the diseased end of the root and promptly returned the tooth to its place with as little disturbance and medication as possible. In due course the tooth became firm, and so far there had been no return of the trouble. With regard to the necessity of amputating the root, he found much less need to resort to it since the introduction of the immediate method of root canal treatment. He had greater confidence in the operation of replantation than Mr. Woodhouse, and therefore, when amputation had failed, he had not hesitated to extract the tooth, remove the abscess sac, smooth the end of the root, and replant the tooth.

Mr. W. **Hern** had had one or two cases of a similar nature to that of Mr. Woodhouse. The first was one which he treated in private practice in October, 1887. The patient—a young lady—had two teeth (upper central incisors) pivoted, but unfortunately over each of the roots was a very large and chronic gumboil with rather a large papilla.

She said that the operator had taken off the crowns once, and tried redressing the roots, but without effect; he—Mr. Hern—then took off one of the crowns, found the root to all purposes healthy, and accordingly came to the conclusion that the mischief was due to necrosis of the root. The patient being young, and the teeth incisors, he did not like to accede to her request and extract them, but told her there was a *dernier ressort.* He applied some cocaine

scess sac, opened it and enlarged it by stuffing in
n wool; he could then feel that the end of the
ough and naked. He then took a rough bur and
the end of the root; the wound was dressed with
f copper, which seemed to hasten the healing pro-
the case did perfectly well. After a short time
nothing but a dimple in the gum, as described by
lhouse.

undertook to treat the other incisor, which was
ery satisfactory. But whether from contraction
ial tissue or some other cause he could not say,
e a few years after the necks of the artificial teeth
how in a dark line, and the patient wished him to
o fresh teeth. In 1891 and 1892—four or five
wards—he cap-crowned both teeth, and they had
perfectly firm and comfortable since. He was
prised that absorption of the roots had not taken
such serious interference with the periosteum.

another case taken from hospital practice. A
een 25 and 30 years of age, came to the London
spital about eighteen months or two years ago
rge periosteal cyst over the right upper central
llowing on the track of some old inflammatory
When the patient was quite a youth at school, he
t a pillar in the playground and broke off the
r central incisor; then came a history of frequent
and finally a chronic swelling, which seemed to
size and gave distinct signs of fluctuation.

t extended about an inch and a half to two inches
incisor to near the first molar; it was so large
not thought advisable to open it in the Dental
for fear of subsequent inflammation; the patient
ore taken to the Middlesex Hospital, where Mr.
uld opened the cyst in the region of the canine
vacuated a large amount of glairy fluid contain-
sterine. The patient stayed in the hospital one
left the next day doing very well. By passing
to the cyst Mr. Hern came down upon a piece
t; he made an incision over the root, cut off the
picked it out of the cavity. The wound healed
tely. The cyst having been very large, the parts
t quite resumed their normal condition.

B. GILL wished to endorse Mr. Woodhouse's remarks as to the efficacy of iodine liniment. It was about fifteen years ago since he commenced to use it, and found it gave the greatest satisfaction in treating chronic alveolar abscess.

Mr. **Woodhouse**, replying, said he did not wish to claim originality for the operation; cases of a similar nature had been reported in dental journals, but he thought such a case would be useful in order to provoke discussion. Mr. Cunningham was rather sceptical with regard to his diagnosis as to whether the periosteum was healthy or not. He (Mr. Woodhouse) admitted there was a good deal of conjecture; he had to pass the drill down very deeply, and with firm pressure, to a point where he felt considerable resistance between the alveolus and the tooth, and therefore presumed, as he could not pass the drill further down, that he had got to the part where the periosteum was adherent to the tooth; he then carried the drill to the opposite side of the tooth, where similar resistence was offered.

There was one other point he would like to allude to—the chance of fracture in extraction. He could not help thinking that in a great many cases there must be considerable risk in attempting to treat this condition by extraction and subsequent replantation.

The **President** thought that after hearing Mr. Woodhouse's case it would be an encouragement to those who had not tried the operation to do so as soon as they had the opportunity.

Mr. REDMAN on a case of Non-Eruption of Teeth.

He had seen a great many cases of non-eruption, but never one where so many teeth were missing. When first he saw the patient, a young lady about 23 or 24 years of age, the only teeth erupted were, in the upper jaw, two molars on each side, a misplaced canine and a central incisor very much decayed; whilst in the lower jaw were two molars on each side. The girl's parents were very much distressed about her appearance from lack of teeth.

The teeth erupted were of a very poor character indeed, all decayed, and almost hopeless. He gold-capped them all, putting a tube up the central incisor root as a support, and then inserted an artificial denture in the upper and lower. After the case had been worn some time, pressure, or some other cause, brought about the eruption of a lower

r, but it came up very little, and after a year it still
ned *in statu quo.* A bicuspid also erupted from the
re, but was in such a miserable condition that he was
d to extract it. The family history showed that the
and three daughters had all good and complete den-
and the mother a very fair denture, but there was one
id missing from her mouth at the age of 40; since
the daughter's case in hand this bicuspid had
ed.

Robbins wished to ask Mr. Redman if the mental
ion of the patient was up to the average, and whether
ysical organisation was good, because in three cases
ad come under his notice two of the subjects were not
right, and the third case was where cousins had inter-
ed, and their offspring was not physically robust.

Redman said the girl was bright and intelligent, and
as he could judge, perfect in every respect with the
ion of her teeth.

Storer Bennett, in answer to Mr. Robbins, would
say that he had seen some cases of a somewhat
r nature to that of Mr. Redman's. He had in his
one case in particular, where there was very marked
e of teeth in two sisters. When he saw them they
bout 36 years of age, occupying very good positions
ciety. and were decidedly intelligent. It was not
perience to find that the mental condition in such
was below the average. Some three or four years
had a case of a girl about 22 years of age with no
incisors erupted; there were five teeth standing in the
jaw and six in the upper jaw—four molars and two
in position of the centrals, but rather the shape of
s than centrals; these were very much decayed, and
hers had appeared. She had two brothers and one
younger than herself with fully developed dentures
ery large teeth. He could not account for the girl
a deficient dentition. Her lower jaw retained the
of that of a young child.

Hern asked Mr. Redman if the temporary set was
normal, and also whether the patient was a younger
er of the family; from cases under his observation it
seem to be more common in the earlier than the later
ers of a family.

Baldwin related a case of a young man aged 20 who in the lower jaw had only four molars and two incisors; he was the youngest member of the family, bright and intelligent, but rather delicate.

Mr. **Redman**, replying to Mr. Hern, said that the temporary teeth were perfect, and were shed at the proper time. The patient was the second daughter and not the eldest; the eldest daughter had perfect teeth, and likewise the two youngest daughters.

Mr. Walter Coffin on a simple and efficient Strengthener for Lower Vulcanite Dentures.

Mr. Walter Coffin described a simple and easily made strengthener for inserting in vulcanite, especially adapted for inferior dentures, partial or whole, which he had used extensively with great satisfaction for many years. It consisted of a metallic strip or wire of any section, preferably of oval or half-round platinum wire, and then wound or wrapped from end to end in an open spiral with a thin gold wire of about the size ordinary gold springs are made of, the whole soldered together with very small pieces or filings of gold solder. The platinum wire is first bent as accurately as possible to fit the model, then wrapped and soldered. It then becomes very rigid, but still slightly elastic in all directions. Any clasps, bands, or gold backings being used may be soldered to the strengthener. When not so held in place, a length of the thin wrapping wire may be left free at both ends of the strengthener and caught in the plaster when investing, to secure the exact position of it in the vulcanite. It is claimed for this form of strengthener that no line or plane of weakness is determined in the vulcanite; that there can be no longitudinal slip on bending; that the plate may be finished and polished right down to the gold without possibility of stripping or peeling in wear; that the strengthener occupies the whole thickness of the plate, showing slightly on both surfaces while affording a maximum of strength.

The **President** regretted not being able to call on Mr. G. Brunton for his casual communication, that gentleman being absent through illness.

Mr. J. **Mansbridge** on a method of mounting Calcified Microscopic Specimens.

The method of mounting which I am about to describe is one I have adopted for certain dry calcified sections where it is desirable to retain air in the structure for purposes of clear definition.

One great disadvantage in the use of a fluid balsam as a mounting medium for this class of sections, is the liability to run into any spaces, such as lacunæ or tubuli that may exist in the tissue, and thus render the specimen useless. To overcome this difficulty I have used with success, desiccated balsam in the following way:

Take a clean slide, place it upon a hot table with a small single lump of balsam upon it; use sufficient heat to slowly melt the balsam, which must not be made too hot. When sufficiently fluid lay the section upon it and cover with a hot cover glass, which must be pressed down in such a way as to expel all air from beneath it. Remove the slide to a cool surface and continue to keep pressure upon the glass for a few minutes, when the balsam will be found to be quite hard and the specimen ready to be labelled and put away finished.

The advantages of this method are I think (1) There is no chance of the mounting medium running in and spoiling the section, as it becomes perfectly hard a few minutes after removal from the hot table. (2) The specimen is finished at the time and is ready for the cabinet. There is no need to use a clip, and no fear of the cover glass shifting if the slide is placed upon its side. (3) It is very convenient for teaching purposes, as the ordinary stiff balsam in a bottle furnished with a glass rod, if used in a glass, soon becomes, together with the students, in a most deplorable condition.

Mr. **Mummery** thought the method described by Mr. Mansbridge would be very useful. In the Weil process, of course the desiccated balsam was used, with which the tissue becomes impregnated; it was not found that the liquid balsam in which the sections were mounted ran into the tubes.

Mr. F. J. **Bennett** did not know if he quite followed Mr. Mummery. He (Mr. Mummery) appeared to like the desiccated balsam because it ran into the tubes, whereas Mr. Mansbridge liked it because it did not run into the tubes. He would like to suggest the use of glycerine jelly, which might be used of such consistence that it could not run into the tubes, and at the same time it excluded the air.

Mr. D. P. Gabell suggested Mr. Charters White's method of impregnating the section with collodion and mounting in Canada balsam.

Mr. Mansbridge in answer to Mr. Bennett thought that a section mounted in glycerine jelly hardly so permanent as one mounted in desiccated balsam.

Mr. Humby on the Annealing of Gold Foil.

Mr. Humby said : At the last meeting of this Society Mr. Brunton of Leeds brought forward a spirit lamp for low temperatures designed for avoiding the reddening of gold during annealing, the reddening being considered by him detrimental to the working qualities of the gold. In conversation with him after the meeting I informed him of some experiments I had made some years ago on the subject, and was induced by him to promise a casual communication for this evening. As it was so long ago I had almost forgotten the details of my results, and have spent the whole of to-day in going through a series of experiments, the range of heat beginning at about the melting point of tin, and ending when the melting point of gold was reached.

I had previously found that at 440 F., or thereabouts, the cohesive property developed, and that deterioration seemed not to be caused by any particular temperature alone, but was the result of keeping the gold for a certain time at such heat.

My first test was at, or slightly above, the melting point of tin.

At 1 second softness and cohesion were obtained.
" 5 minutes " " " " "
" 10 " " " " " "
" 15 " " " " " "
" 20 " " " " " "
" 25 " " " " " "

At the melting point of lead or slightly above it :—

At 1 second softness and cohesion were obtained.
" 5 minutes " " " " "
" 10 " " " " " "

At 15	minutes	slightly reduced softness and reduction of cohesion.
„ 20	„	still more loss.
„ 25	„	„ „ „
„ 30	„	„ „ „
„ 35	„	„ „ „
„ 40	„	„ „ „
„ 45	„	greatest hardening and loss of cohesion.
„ 50	„	less „ „ „ „ „
„ 55	„	„ „ „ „ „ „
„ 60	„	„ „ „ „ „ „
„ 65	„	gold returned to a good working condition.

At zinc melting point or slightly above:—

At 2	minutes	slight loss of cohesion and softness.
„ 5	„	return of „ „ „
„ 10	„	„ „ „ „ „
„ 15	„	„ „ „ „ „
„ 20	„	„ „ „ „ „
„ 25	„	complete restoration of softness and cohesion.

At a dull red heat ascertained by darkening the room, at every test up to twenty-five minutes, at five minute intervals, the gold remained exceedingly cohesive and soft.

The next test was a bright red on platinum foil. These tests were continued until the platinum adhered to the gold. There was no deterioration whatever.

The next tests were with the flame in contact with the gold and were from a dull red upwards until the last cylinder melted to two-thirds of its original length, and this most highly heated cylinder was softest and most highly cohesive of any of the series tried. The gold employed was Messrs. Smale's No. 1 A cylinders.

Mr. W. **Coffin** was inclined to confirm Mr. Humby's conclusions as to the absolute molecular softness of gold; but when a cylinder, formed of a number of laminæ, was treated so as to transform it into a bar, its properties as a filling material were essentially changed.

Mr. **Baldwin** thought gentlemen must have found that if gold cylinders were at all sweated they absolutely refused to stick. For a long time he had been working with one thickness of No. 20 gold, and found it made no difference whether this was sweated or not.

Mr. GILL remarked that some years ago he was informed by a jeweller that if gold plates were to fit well they must be annealed in charcoal. He began making experiments, and found just as Mr. Humby described, that when first the plate was put in the heat it hardened, but by prolonged annealing it became soft. He found also that charcoal dirtied the gold and caused deterioration of quality.

Mr. ASHLEY BARRETT on some Abnormal teeth.

The first case was that of a tooth which represented a lower incisor in the mouth of a girl, aged 15 years, with a peculiar cusp on the lingual surface. The second case was a right upper first and second molar fused together, which were removed from a female aged 40. There was a history of chronic irritation and offensive odour. He was anxious to remove the first molar, but the second also came away, the two being joined by cemental union.

Mr. ROBBINS, for Mr. Gould, of Madras, showed two models of a patient, aged 22, exhibiting in a very marked manner the condition known as "open bite." Mr. Gould desired the opinion of members as to the best means of treating the case.

A vote of thanks having been accorded to those gentlemen who had brought forward casual communications, the meeting adjourned until May 1st.

Dental News.

DENTAL BOARD OF VICTORIA.

AT the Annual Meeting held on February 24th, the registrar submitted the following draft of the annual report for the year 1892, as follows :—

The Dental Board of Victoria have the honour at the conclusion of their fifth year of office, to submit the following report for the information of the Hon. the Chief Secretary :—

1. That they have held thirteen meetings during the year, and have during that time registered sixteen persons as dentists, and issued twenty certificates of registration.

2. The Board have during the year had under consideration the modification and revision of the regulations framed

Dentists Act 1887. The revised regulations were to the Governor-in-Council under the provisions of cal Act 1890, Part II, and were duly approved.

hile the administration of the Medical Act so far as o dentistry continues generally satisfactory, the ve had to take into serious consideration the possi- number of unqualified men claiming in the future on under section 55 of the Act, under which clause dents who were indentured six months previous to g of the Dentists Act 1887, may claim registration xamination. Should applicants continue to claim on under this clause, and thus set aside and ignore al curriculum which is now in force, the Dental ll deem it its duty to consider the advisability of he Government to introduce amending legislation egards the provisions of this section.

"modified examination" under the regulations of ay, 1889, was held during the year, on the 10th, 14th September. At this examination six students themselves, of whom two were successful in

der the regulations relating to the election of the of the Board, the three members who retired y were Drs. Gresswell and Springthorpe, and Mr. eorge, J.P. They have all been formally nominated tion.

e Board enclose a copy of the Dentists' Register for your information.

COLLEGE OF SURGEONS OF ENGLAND.

lowing are the questions set in the Papers at the tion for the Diploma in Dental Surgery, held last

2 to 4 o'clock, p.m.

-The Candidate is required to answer at least one of uestions, both on Anatomy and Physiology, and on and Pathology, unless he is entitled by the Regula- xemption from any of those subjects.

Anatomy and Physiology.

ve the position of the Parotid Gland and its Duct. nature and uses of its secretion.

2. Mention the origin, insertion, and nervous supply of the Extrinsic muscles of the Tongue.

Surgery and Pathology.

3. Enumerate the causes which may lead to Necrosis of the Lower Jaw. Describe the symptoms of a case of Necrosis from Alveolar Abscess, and give the treatment of the various stages.

4. Describe the mode of formation of a Dentigerous Cyst, and give the signs by which you would recognize its presence.

5 to 8 o'clock, p.m.

N.B.—The Candidate is required to answer at least two of the three questions, both on Dental Anatomy and Physiology, and on Dental Surgery and Pathology.

Dental Anatomy and Physiology.

1. Mention any general characters of Marsupial Teeth, and illustrate from this group the adaptation of teeth to varieties of food.

2. Trace the growth and changes of form of the lower jaw from its first calcification up to advanced old age.

At what ages are the roots of the several permanent teeth completed?

3. Describe the structures which would be seen under a low power in :

(i) A transverse vertical section through the lower jaw of a child aged 5, passing through the first milk-molar.

(ii) A longitudinal vertical section through the lower incisor and jaw of a rat.

Dental Surgery and Pathology.

1. What Antiseptics are used for root dressings? Give their several methods of application, modes of action, and advantages and defects.

2. Under what circumstances do you meet with dental periostitis during the life of the pulp? Give an account of the conditions which may eventuate in an alveolar abscess, mentioning the treatment appropriate at the various stages.

3. To what points would you give attention in order to secure a correct "Bite:"

(i) In an edentulous case?

(ii) In a case with lower incisors and canines alone remaining?

(iii) In a case with many teeth in both jaws?

DINBURGH DENTAL HOSPITAL AND SCHOOL.

ner session of the above school opened on the 1st
he number of Students entered is nine, being
umber of entries in any previous summer session.
s large increase of students, several important
and additions to the working staff have been
the number of chairs has been increased.
he steady progress of this Institution is highly

Y OF PHYSICIANS AND SURGEONS OF GLASGOW.

ay sittings of the Dental Board, the following
aving passed the necessary examinations, were
entiates in dental surgery :—Samuel Anderson,
; William D. Anderson, surgeon, Glasgow;
Carrington, Stockport; Percy Ravenscroft,

wing candidates passed the First Professional
:—Mr. J. D. Forrest, Mr. W. P. Pearson.
idates were referred at the First, and two at the
ation.

YAL COLLEGE OF SURGEONS OF EDINBURGH.

Iay sittings of the Examiners the following can-
sed the First Examination for the Diploma in
gery:—Charles John Luya, Liverpool; John
ntosh, Inverness; Alexander Shennan, Hough-
g; John Douglas Logan, Dublin; James
wart, Stirling; Joseph Morton, Carlisle; George
elfast; Henry Theodore Dreschfeld, Manchester;
ph le Verrier, Bridport; Alexander Cromar,
Joseph Vincent Crogan, Seville; and the
ndidates passed the Final Examination, and were
.D.S. Edinburgh :—Andrew Thom, Edinburgh;
ard Edwards, Flintshire; and John Charles
uddersfield.

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester, during the month of April, 1893.

Number of Patients attended	862
Number of Extractions	615
Number of Extractions under Anæsthetics	100
Gold Stoppings	19
Other Stoppings	98
Miscellaneous {advice, temporary fillings, scalings, dressings, &c.	272
Crowns	5
Irregularities	18
Total	1127

J. C. LINGFORD, L.D.S. Eng., *House Surgeon.*

Birmingham Dental Hospital, Quarterly Report, 1893.

	Jan.	Feb.	March
New Patients attending	405	483	484
Old ,, ,,	261	335	415
Anæsthetic cases	112	137	149
Extractions under Anæsthetics	464	528	706
Ordinary Extractions	252	300	329
Fillings	178	207	235
Dressings	101	103	129
Scalings	8	7	13
Regulations completed	3	4	2
Miscellaneous	246	266	272
Total number of operations	1269	1445	1727

Grand total 4441.

J. DENCER WHITTLES, L.D.S. Eng.,
House Surgeon.

ritish Journal of Dental Science.

609. LONDON, JUNE 1, 1893. Vol. XXXVI.

TERN DEMONSTRATION ON THE BACTERIA OF THE MOUTH.*

By Edmund W. Roughton, B.S. Lond., F.R.C.S.

ntlemen,—I propose to occupy your attention for a
time to-night, by showing you upon the screen some
graphs of the bacteria of the mouth.

cteria are extremely minute vegetable cells, which are
ibuted very widely, and fill most important and useful
in nature. Unfortunately for the general public, and
pose you will say, fortunately for the dental profession,
bacteria are not always our useful servants, but very
rise up against us, and produce the most deleterious
ts. Amongst the numerous diseases now known to be
result of the action of bacteria, dental caries is very far
being the least important, in fact, to you students and
titioners of dentistry, it is of such paramount importance
I do not offer you any apology for bringing the subject
ard to-night.

ke all other living things, bacteria require food to live
. They are not very particular in their choice, and
are very few things that some bacteria, at least, will

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ead before the Students' Society, National Dental Hospital, London.

not flourish in. In the mouth the particles of food re ing between the teeth after a meal soon become per with bacteria.

(1). The first slide illustrates this fact. A small pi bread was chewed up, and then placed in a stoppere tube, and put in the incubator for three days; at the e that time a small drop of the fluid which separated fro bread, was spread on a cover glass and stained, and that specimen the photograph was taken. You will se there are numerous bacteria of different sorts, but i specimen chiefly chains of short oval bacteria.

(2). This slide shows another food material whi bacteria of the mouth live upon. It is a large squ epithelial cell upon which are seen a large number of ba chiefly short rod-shaped organisms. It is in this m that the worn out epithelial cells are disposed of.

(3). The food materials in the mouth seem to suit e the requirements of some half dozen species of ba consequently these are found in the mouth more freq than all the other bacteria put together. If a small p of the soft white matter which collects upon the te spread out in a very thin layer on a cover glass, and s with gentian violet, a specimen will be produced sim the one from which this photograph was taken. On lo at it with a $\frac{1}{12}$ immersion lens, we shall see three di classes of organisms, some being rod or thread shape round or egg-shaped, and others spiral or screw s Some of the thread shaped organisms are jointed, and are without joints; to the latter the name leptoth usually given. Sometimes the threads are isolated, times intimately jumbled up like a ball of tangled Notice the large jointed rod-shaped organism. This bacillus buccalis maximus.

(4.) This slide shows a tuft of leptothrix of large

e that a large number of thick jointless threads
g from a common root or tuft. The speci-
ed from underneath the slightly inflamed gum

specimen shows one form of spiral organism
frequently found in the mouth, especially under
f inflamed gums. It is called the 'spiro-
n. It is a very delicate, wavy thread, and is
t to stain well, and consequently not easy to
It is not known whether it is the cause of any
bid condition, but it is almost always to be
outh, especially when in an unclean state.

slide shows the other form of spiral organism
nd in the mouth. It is the spirillum sputi-
fers from the last form in that it presents only
a comma. When seen in the living state, it is
about very rapidly. This movement is effected
a whip-like process, or flagellum, which can
when the preparation has been stained by a
d. Sometimes there is only one flagellum
e end of the cell, sometimes it is attached to
sometimes there is quite a bunch of them.

is the cholera bacillus. I show it to you to
tention to the close similarity in form between
pirillum sputigenum. At one time they were
be one and the same organism, but it has now
that whilst the cholera bacillus grows readily
e, upon gelatine, the spirillum sputigenum will
the mouth, and resolutely refuses to grow on
medium.

is the micrococcus of sputum septicæmia also
he pneumococcus of Fraenkel. The specimen
ed from the peritoneal fluid of a dog which
njected with human saliva. It has long been

known (even to the ancients), that the human saliva was poisonous, although it has been a popular idea that saliva was an excellent lotion for slight wounds. This toxic property has been, from time to time, attributed to various causes, but it was first shown by Ragnaud and Lannelongue, in 1881, that it was really due to the presence of micro-organisms. About the same time Pasteur discovered in the mouth of a child suffering from hydrophobia, an encapsuled diplococcus. Saliva containing these germs when injected into rabbits produced a rapidly fatal result. This he considered to be the specific germ of hydrophobia, but Vulpian soon afterwards produced the same symptoms and fatal result by injecting healthy saliva, and the same capsule cocci were found in the blood of the dead animals. A. Fraenkel discovered the same organism in cases of croupous pneumonia, and others have since found it in peritonitis, pleurisy, meningitis, otitis media, and other inflammatory processes. In the causation of these various diseases it plays a most important part, if, indeed, it is not solely responsible for them. It occurs frequently in the mouths of healthy persons in the form of encapsuled diplococci, which are not always easy to find under the microscope, but whose presence may be demonstrated by injecting some of the saliva into mice. Out of one hundred and eleven mice killed in this way, Miller found the M. of sputum septicœmia in the blood and tissues in sixty-one. The saliva had been taken from a different person in each case.

The micrococcus will grow on culture media, but not readily. It requires a temperature somewhere between 24° and 42 $_0$C., and a faintly alkaline medium. The colonies resemble dewdrops in appearance. They will not live much longer than five or six days, after which time, if it is desired to further propagate the species, it must be done by passing it through the body of a susceptible animal, and from its blood inoculating fresh culture media.

The descriptions of this organism by different observers, differ somewhat in detail. This fact, coupled with its widespread pathogenic action, has led one to suspect that there may be more than one variety of it. Miller has described four separate varieties which he designates by the numbers i., ii., iii., iv.

No. i. is identical with the pneumococcus of Fraenkel. It is always encapsuled in the body, but never in cultivations.

No. ii. differs slightly from No. i. in its growth on artificial media, and is encapsuled in artificial cultures as well as in the body.

No. iii. differs but slightly from No. i.

No. iv. differs from the others in that it very soon loses its virulence in passing through the bodies of mice.

9. This is the same diplococcus from the expectoration of a patient suffering from pneumonia.

10. This is the so-called pneumo-bacillus of Friedlander. You will notice that it resembles the pneumo-coccus in possessing a gelatinous capsule, but differs from it greatly in shape and size. At one time it was thought that the organism was the exciter of pneumonia, but it has now had to give place to the pneumococcus of Fraenkel. It is, nevertheless, a pathogenic organism, and when injected into animals produces a fatal result.

11. This specimen was prepared from the pus secreted in a case of fœtid empyema of the antrum. In the centre of the field you will see two groups of four micrococci surrounded by an indistinct halo or capsule. This is the micrococcus tetragenus. It is not unfrequently found in saliva, and in the fur on the back of the tongue. When injected into animals it produces a fatal result.

12. This shows the same organism in the peritoneal fluid of a dog who died as the result of being injected with

saliva. In this specimen the gelatinous capsule is mu more clearly visible.

13. This is the bacillus buccalis septicus, also obtain from the case of empyema just referred to. Miller h recorded the case of a dentist who injured his finger with burr whilst clearing out a decayed tooth. The result w suppuration in the wounded finger, the axilla, the lungs, a elsewhere, no less than 135 abscesses forming in the cou of two years. The pus in the abscesses contained this bacill

14. A chain of streptococci from the same patien mouth.

15. Group of staphylococci. Culture from the sa patient.

16. Mixed culture of torula and micrococci from the sa patient.

17. The streptococcus pyogenes. Culture from case alveolar abscess, the result of a buried stump. The mic cocci occur in longer or shorter chains. This is one of t organisms most frequently found in suppurating processes.

18. A culture from a case of pyorrhœa alveolaris.

This disease is characterised by progressive suppuration in t sockets of the teeth, so that pressure upon the gums causes pus exude around the necks of the teeth. The latter gradually loo and eventually drop out, without, as a rule, undergoing a decay. The disease is very insidious in its onset, as it cau no pain, and such a small quantity of discharge, that it is n perceived by the patient, whose first cause of complaint usually loosening of the teeth. In some cases there is a gr accumulation of tartar, in others there is none. In the wo cases the trouble spreads to the jaw bone itself, causing m or less extensive necrosis.

ere has been much discussion among dental patholog e nature of this disease. Some have held that it i ocal affection, and others that it is entirely consti

'ow, the truth is, I believe, half-way between the
so often the case when two schools take diametri-
site views. In all germ diseases it is necessary to
vitality of the part before the germs can touch it.
very few, if any, germs which, when placed upon
y healthy, uninjured mucous membrane can do
out die. There are many obvious ways in which
ing of vitality may be brought about in pyorrhœa
Accumulation of tartar, slight gingivitis, injuries
, etc., may be cited as local predisposing causes,
ma, gout, syphitis, rheumatism, and wasting diseases,
stitutional predisposing causes. Germs are present
ce in the pockets between the gums and the teeth,
may convince himself of by making a cover glass
n of the pus which oozes out on pressure. This
s pyogenic staphylococci and streptococci. Miller
d twenty-two different organisms from twenty-
s of pyorrhœa. It would appear, therefore, that
one special germ which can claim this disease as
ut that any of the pyogenic bacteria may produce
e necessary predisposing causes have prepared the
r it. That pyorrhœa is in reality a germ disease, is
rroborated by the remarkable effect of treatment
oride of mercury. Recently, a woman came to my
t department at the Royal Free Hospital with very
eeding gums, and pus welling up in abundance from
e teeth and the gums. Hers was an unusually
. I advised her to cleanse the gums, and then twice
tuff down minute wisps of cotton wool soaked in 1
erchloride solution, into the gum pockets, working
around each tooth. When she presented herself a
r, the gums presented a natural appearance, no
eeding when touched, and no pus oozing up on

The worst of this treatment is that

efficiently carried out, it diminishes the discharge of pus so quickly that patients are apt to think they are cured whilst there is still some minute suppurating spot between or behind the teeth from which the disease may spread again. The teeth tighten up wonderfully after this treatment in recent cases, but of course, when much absorption of the alveolus or necrosis has occurred, it is impossible to restore the lost socket, and the teeth remain loose, although the suppuration has been stopped. Many dentists are sceptical with regard to the efficacy of treating this disease by the perchloride, but I think that Mr. Farmer, who has been treating several cases in this way lately, will be able to bear me out.

19. Saccharomyces mycoderma. This organism belongs to the yeast family, and produces the white patches known as thrush, so often seen in the mouths of young children. In appearance it somewhat resembles a number of strings of sausages.

20. This and the remaining slides illustrate the microscopical appearances of dental caries. There are many causes which lead to decay of the teeth. Into these it is not my intention to enter, but I would simply point out to you that dental caries is nothing more or less than the devouring of the teeth by micro-organisms. In this specimen there is extensive decay of the dentine, the tubes being crammed with micrococci, in some places so full are they, that they even bulge, producing the appearance known as liquifaction foci.

21. This slide is a part of the last one more highly magnified. It shows the individual micrococci very plainly.

22. In this section the tubes have been cut obliquely. Near the outer extremities of the tubes, their terminal branches are seen to be filled with single rows of micrococci.

23. The preceding specimen showed only micrococci in the tubes, but it would appear that any organism whose size

may invade the tubes and produce caries. In
the infection is almost entirely by bacilli.

etimes (in fact more often than not) the infection
han one sort of organism. In this slide you will
ne tube contains bacilli, whilst the one next to it
ci. It is said that sometimes one tube may con-
an one form. I have never seen this myself.

is specimen the tubes are occupied by bacilli and
eads.

slide shows a more uncommon appearance; the
upied by long convoluted threads.

specimen shows the margin of a cavity. Notice
leptothrix with which the cavity is lined.

section has been made transversely to the long
ibes, whereas most of the others were longi-
tice the tubes crammed with dense masses of
nd the delicate threads of leptothrix extending
. Notice also the so-called pipe-stem appearance
some of the tubes.

ion, let me press upon you the practical deductions
from the facts I have demonstrated to you to-

erybody should keep his mouth as clean and as
ms as possible.

in operating upon the mouth strict cleanliness
erved. A dirty instrument should never be put
mouth.

Take care not to injure your own fingers in the
our profession, for the consequences may be very

TREATMENT OF IRREGULARITIES.*

Mr· By P. M. Scholefield.

Mr. President and Gentlemen,—The subject which I have the honour to bring before you is one which differs somewhat from other subjects in dental surgery, inasmuch as the successful treatment of irregular teeth depends absolutely upon the amount of the operator's ingenuity and knowledge of the developmental structures of the teeth and jaws. It is, I believe, an acknowledged fact that there are no two mouths alike; that being the case, it would, therefore, be impossible to find two patients with mouths presenting precisely similar irregularities. I have no doubt they could sometimes be found to compare very closely with each other in points of similarity, yet at the same time they would not be exactly alike. I mention this in order to show that the practitioner having an irregularity to treat, ought not to rely entirely upon the manner in which somewhat similar cases have been treated, but, on the contrary, after having given due consideration with regard to the age, sex, etc., of the patient, form an unbiassed opinion as to what treatment would best suit his own particular case. Having resolved to treat the case mechanically, the dental surgeon has quite a variety of mechanical appliances to select from. The principles of some of them are both elaborate and complicated in design, whilst others are conspicuous by their simplicity, some slight alteration in any of these appliances can generally be made to meet the requirements of almost any case. A very simple mechanical arrangement, which is often used as a means of regulating teeth which have a tendency to lean inwards, is a vulcanite plate built high up behind the irregular teeth, which are moved by small pieces of compressed wood (rubber, such as is used for separating, is sometimes employed), being placed between them and the plate, which is dovetailed in order to hold the wood secure. Then there is the Coffin plate, which, I think, is used more advantageously in expanding the arch than regulating individual teeth.

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* Read before the Students' Society, Liverpool Dental Hospital.

At this point I shall avail myself of the opportunity to mention that I am indebted to Mr. Woods, who has kindly lent me what is really a good modification of the Coffin plate, the principle being the same, and which, I believe, was first introduced into this hospital by our honorary surgeon, Mr. Mansell. It consists of an ordinary vulcanite plate divided into two, the two halves being connected by means of a screw which is embedded in the centre of the plate, having a direction from side to side. If made of German silver wire of considerable thickness, as in this case, the screw necessarily makes the plate somewhat thick at that part. I would suggest that pin wire, which would be quite strong enough, might be substituted instead.

The plate being placed in the mouth, as made on the model, fits in the usual manner. To bring it into operation, the plate is taken, and one of the halves is screwed round once, obviously widening the plate, which is then placed in the mouth, the patient being instructed to use occasional pressure until it again fits easily. To do this he must, of course, exert lateral pressure, and consequently widen the arch, an occasional screwing round of one of the halves, which the patient can perform, will subsequently bring about the desired result.

A jack-screw may be substituted, which could be slackened or tightened, by means of a key, at the will of the patient; this might perhaps help to make it a little more comfortable, a condition which, unfortunately, is not too closely associated with the wearing of a regulation plate. Sir John Tomes, in his book on Dental Surgery, says that the jack-screw, being possessed of great power, may be used for the expansion of the whole arch, or for the thrusting outwards of individual teeth, it may, he says, be used either acting directly upon the teeth, without any plate, or in conjunction with a plate, a split or detached portion of which it impinges upon; the latter plan, he goes on to say, is preferable, as being less likely to injure the teeth, and also as rendering the attachment of the screw more easy.

An effective operation on irregular teeth can be performed by the application of elastic bands, usually in connection with a plate, one of the advantages of these little appliances being, that they can be applied to a variety of cases with great success. For instance, they are particularly efficacious in drawing teeth towards the back of the mouth in order to make room. In one case, where I utilized them for this purpose, the six-year-old molars of the upper jaw had been extracted, so that the bicuspids might be drawn into the space which the molars had occupied.

This I arranged by making a vulcanite plate and continuing it in the form of caps over the twelve-year-old molars, and by fitting metal collars around the second bicuspids. Having fastened pins on the inner and outer sides of the caps and collars respectively, I stretched elastic from each of the pins on the caps to the corresponding pins on the collars, consequently exerting considerable and constant tension, which I think is very desirable in regulation cases.

When the second bicuspids had moved sufficiently near to the molars, I removed the collars from them to the first bicuspids, and proceeded to treat them in the same way. By a slight alteration in the arrangement, which I have just endeavoured to describe, teeth protruding outwards could be pulled into their proper position, although this operation is, I

nk, more frequently done by passing pianoforte, or unan-
ıled dental alloy wire, attached to a plate, over the labial
buccal surfaces of the protruding teeth, which acting as a
ing, soon places them in a line with the adjacent teeth,
is simple appliance is particularly useful when several
th are to be operated upon, as it can usually be made to
brace any number.

Another point in its favour is that it can be cleansed
ularly by the patient, this being very desirable, so much
that, when it is practicable to insert a regulation plate,
sessing this advantage, it should in all cases be applied.

There is an operation, said to be far from rarely performed,
ich is known as Torsion, or twisting of the incisors
on their axes in the case of a malposition of those teeth.
is is done by seizing one of them by its labial and lingua
by its mesial and distal surfaces, the instrument usually
ployed being a pair of straight incisor forceps, placing
ween the blades some soft material to prevent the enamel
m chipping. Lead-foil answers the purpose very well.

The tooth being then firmly grasped, is twisted in the
uired direction, care being taken not to loosen it by twist-
it in opposite directions. Owing to the resistance, and
newhat flexible condition, of the alveolus, the tooth on
ng released springs back, and to overcome this, it is
nerally necessary to twist it farther than its normal posi-
n. The patient is naturally subjected to a considerable
ount of pain by this operation, and I think that where it
possible to bring about the desired result gradually, that is
the application of some mechanical arrangement, this
ould be done for more important reasons than that of dis-
nsing with pain. When the two upper central incisors
m together, at their mesial surfaces, an acute angle, on the
gual side, which, I believe, is rather a common form of
egularity in these particular teeth, they can be satisfactorily

treated by tying securely a small piece of compressed w on the labial surfaces of these incisors, at the point w their mesial surfaces meet.

The wood on swelling pulls upon the ligature and ro the teeth.

There are also other varieties of irregular incisor te which falling into the hands of the Torsionist (if I ma allowed the term), would be operated upon by that indivi but could be more safely and humanely dealt with, by application of some such simple device as I have mentio One of our lecturers made reference, some short time si to the intrusion of wisdom teeth into mouths which coul very well without them, and although it is natural that should be possessed of these somewhat useless appendage does seem curious that in the majority of cases, the de arch is unable to accommodate them, along with all the o teeth, without overcrowding.

He attributes contracted condition of the jaws to the r sex having, at some remote period, a decided preference diminutive and narrow-jawed persons of the opposite Many cases of irregularity or over-crowding, which woul caused by the eruption of the wisdom teeth, can be preven by the extraction of the four six-year-old molars. Of all teeth, none are so frequently out of position, at the time eruption as the canines, and it is a well-known fact that many instances, where this is the case, these teeth will fall i their normal position without any mechanical assistance. I often observed that in patients of ten or twelve years of a the canines occupy a situation more or less external to arch formed by the incisors, but that before the eightee year has been attained all irregularity has disappeared.

When the canines are prevented from falling into posi because of the space, between the laterals and first bicusp being too narrow, it is some times thought necessary to

; the latter teeth in order to make room, whether they be .d or otherwise, and although this form of irregularity is emely disfiguring to the patient, I think it important that ases af irregularity, where we deem it advisable to sacrisound and useful teeth, we should refrain from resorting his expedient before giving the case careful consideration.

is often necessary in regulating cases to open the bite, at the teeth which are being operated upon may be preed from being interfered with by the opposing teeth; n this is done, it naturally puts the patient to some inconence, which can be considerably lessened by allowing sufficient space between the upper and lower teeth to ent them from touching, and no more.

; seldom occurs that the front teeth are crowded without bicuspids to some extent taking part in the general irregity. These teeth are in many cases situated internally to normal position, sometimes being the cause of the canines aring to be somewhat prominent; they can, however, orced outwards without much difficulty by the aid of an nsion plate constructed to act directly upon them.

n the other hand, with regard to molars, they do not very uently assume irregular positions, but when they do, and deemed advisable to treat them mechanically, it will be d that they do not yield so easily to pressure, as the other h. After irregular teeth have been treated and moved their normal positions, a retention plate should always be d and worn for some time, so that they may be prevented a resuming their previous situations.

n conclusion, gentlemen, I would say that patience, perseance, and skill, are virtues which must be possessed by the ator if he wishes to accomplish satisfactory results in the tment of irregularities.

British Journal of Dental Science.

LONDON, JUNE 1st, 1893.

CAVEAT EMPTOR.

We write in our copy-books that there is no royal road to learning; and it is doubtful if we, or those who follow us, will ever find a better method of acquiring knowledge other than that of experience. Nature seems to have arranged this for us, and the value of the information thus gained is perhaps greater, and more lasting, than that obtained in a less practical, and more selfish manner. Experience teaches; and the only way of mitigating, or of avoiding, some of the unpleasantness, is by profiting by the experience of others. This temptation to escape has, indeed, something besides selfishness as an excuse. It develops the faculty of observation and calls into existence a sympathy with the victim who has furnished the object lesson; this may, we hope, sometimes result in a determination to make a return by co-operation against the evil which has been tested. The elements entering into the struggle for existence are of too complicated and elaborate a nature to allow of discussion in a few words, and we are now concerned with merely one factor which we would fain hope might be omitted without interfering with the production of the fittest. The tendency for an individual to benefit at the expense of his fellows is an outcome of the race for wealth, and the estimation in which the prize is held is responsible for the development of an economy in the matter of truth. This, associated with unblushing exaggeration, bids fair to become recognised as a virtue amongst a certain class of

So long as commercial public announcements
thing but the truth, mere ethical objections to
will not avail. But when the eagerness to
rtain return for money spent leads to false state-
wonders whether the legal maxim of *caveat*
y not some day give place, at the public wish, to
artment whose duty it will be to protect the pur-
stead of leaving him to look after himself.
or good or ill, it is now left to private exertion
ate many of such cases. True, we have an excel-
by which inspectors obtain samples of food for
ut there should be an extension of the principle,
in the case of remedies for disease. Here the
ls to be protected from itself, for, as the *British*
urnal recently pointed out, the public will very
ke a quack remedy regardless of any warning.

dication of what may be found even in professional
may refer to an instance likely to interest our
.E.C.Kirk, the editor of *The Dental Cosmos*, read
March, before a New York dental Society, in which
he results of an investigation into the composition
vell advertised preparations for the production of
thesia. Samples of ten different preparations
sed by a professor of chemistry, and, with one-
all of them were found to contain cocaine. This
sting from the fact that in some cases the pro-
her explicitly deny that their preparation contains
‘ or so word their statements as to warrant that
The author of the paper presents a table of
nd then quotes from pamphlets and circulars in
his contention. The practical outcome of his
tion bears upon the ethical question as to the use
s by practitioners, but all who may be tempted to
h mixtures owe a debt of gratitude to Dr. Kirk
gy and courage in undertaking the investigations
hing his results. He is right in thinking that
dition of affairs as he has exposed “ constitutes a

real danger to the dental profession and the community at large."

In Berlin it seems that, at all events in some respects, the *emptor* is warned as well as the seller, and we can well bring our remarks to a close by quoting the translation of an advertisement by the police authorities :—

"Notice.—As a cure against the most varied skin diseases, a Mrs. —— recommends her skin tonic in the daily newspapers. This secret medicine consists of a solution of corrosive sublimate in water, with the addition of some glycerine, and it is slightly perfumed. It is sold in bottles containing about ℥vj for the sum of eleven shillings, while the real value of the bottle contents is less than three farthings. The above advertisement is hereby given in order to warn the public."

TEACHING THE YOUNG IDEA.—Those who are in favour of instructing the young upon matters affecting the human body, may be interested in the following, which is quoted as having occurred in a London Board School.

A lesson was given on physiology having special reference to the teeth, and the teacher, to test the knowledge of the subject, asked "What are the first teeth?" "Milk teeth," was the answer. "What are the next?" "Permanent teeth"; and "What are the last?" "Wisdom teeth," said one, and "False teeth," said another.

DEATH UNDER CHLOROFORM.—A case is reported from the Queen's Hospital, Birmingham, in which it would appear that the respiratory centre was affected. A male patient, about 50, had inhaled nearly two drachms in about seven minutes. Methylated chloroform was administered upon a towel placed in front of the mouth and nose, commencing with a few drops. When being moved for the commencement of the operation, he became cyanosed and ceased to breathe. The pulse was beating and continued to do so after the respiration had completely ceased. The usual remedies were tried and artificial respiration was continued for twenty minutes. A *post mortem* examination did not reveal much.

THE INCREASE OF CANCER.—Messrs. Butlin and Sibley in 1888, had come to the conclusion that although part of the increase recorded is very likely to be due to more skilful diagnosis and precision in certifying, yet these would only account for a small proportion of the increase. Mr. George King and Dr. Arthur Newsholme have recently read a paper before the Royal Society in which it was maintained that there was no increase in deaths from cancer where the disease is situated in such parts of the body as to be easily accessible and recognised. This conclusion was drawn from a study of the cases at Frankfort, where they were classified into accessible and inaccessible for about 30 years, but it is thought that the number of deaths from "accessible" cancer were too few to give trustworthy results if considered alone. Another point made was that the apparent increase of cancer amongst well-to-do people, who are well looked after, is not so great as among the general population.

A CALCULUS IN STENO'S DUCT.—Mr. Treves recently operated at the London Hospital upon an elderly woman who had been sent up on the supposition that she was suffering from parotid cancer. Mr. Treves found that one side of the patient's mouth was drier than the other, that the pain was increased during mastication, and that during the act the tumour increased in size. He therefore slit up the duct with scissors and knife and with some little trouble, extracted a stone which was blocking up the canal and causing

enlargement of the parotid gland. The calculus could
be previously felt by passing a probe into the duct nor c
it be felt through the mucous membrane.

A FATAL OINTMENT.—According to *The Medical P*
a family of eight persons in a Hungarian city were suffe
from Scabies. A "wise woman" sold them a strong
curial ointment with which the whole body was to be fi
rubbed. The basis of the ointment seems to have
composed of putrid fat, which set up blood poisoning
few days. When a medical man was called in, two chil
were already dead, a third was dying, and it was expe
that the rest of the family would probably succumb.
same Journal announces that an addition to the Ita
patent medicine invasion is being advertised. One of
remedies is a wonderful liquor which is claimed to be "
in its kind for preventing softening of the teeth."

THE ADMINISTRATION OF COCAINE INTERNALLY.—
inquiry has been instituted in Philadelphia as to the v
held by prominent physicians there, concerning the u
cocaine. There seems reason to believe that it has alr
been productive of much harm. Two medical men, th
selves, are referred to as having contracted the coc
habit. An experiment was tried in the case of some hea
men just before a boat-race, and it was thought tha
immediate effects of a grain of hydrochlorate were incre
confidence and sense of power. Whilst there wa
increase in force, it seemed that exertion could be lo
maintained. For some days afterwards there was insom
loss of appetite, and dull headache, so that it is eas
understand there was some objection to the repetition o
experiment when this was suggested. Cocaine has also
used to control vomiting, but acts best when the stomach
been previously washed out.

ATIONS TO MINISTERS.—The British Medical
n has recently paid visits to some of the heads of
nt departments. A deputation to Sir George
urged reasons against medical officers of health
d being allowed to engage in private practice. It
ted out that as human nature is constituted, a
t interest, predominantly, is his private interest.
county medical officer has among his private
nded proprietors with dilapidated farm buildings,
en who speculate in house property of a certain
scarcely fair to the practitioner, or to the public
ould be placed in such a position. Another depu-
he same Association waited upon the Secretary of
War, to urge various amendments in the conditions
of the Army Medical Department at home and
d the Secretary of State for India also received a
regard to the six years' service in India, one
iece of evidence was put on record. Of the first
fficers that came under this rule, twenty-nine went
Of these six died, ten were invalided home, 'and
he Hills; making a total of seventeen died or
out of twenty-nine.

ENERAL MEDICAL COUNCIL.—The following are the
n the President's opening address which refer to
atters :—" Matters connected with the Dentists Act
prominently brought forward during the recess.
ing to dentists, prepared by the solicitor in accord-
the direction of the Council and adopted by it,
ect that the Council would consider and deal with
ices of " covering" and the wrongful employment
ified assistants as infamous conduct in a profes-
pect, has led to a great number of applications from
o had neglected their opportunity to register.
plications have been submitted to the solicitor for
tion, and it is possible that some litigation may

arise in one or more of these cases. The solicitor will su mit a report on the whole subject. A report will also submitted by the Education Committee on certain commu cations in connection with American diplomas in dentist granted by the Universities of Harvard and Michiga which will in due course come on for the consideration the Council."

Dental Hospital of London.—The Students of t Hospital have arranged a grand Evening Concert, to given at St. James's Hall next Tuesday, June 6th. Th have a long list of distinguished patrons, and a strong list eminent *artistes*; so we may hope that, as an outcon there will be a substantial addition to the Building Fu for the New Hospital. Tickets may be obtained at Leicester Square, from Messrs. E. H. Pascal-Taylor and Francis Mellersh, the Honorary Secretaries.

NATURE'S PROTECTION OF THE MOUTH.

Dr. Joseph declared at the Odontological Society of Pa that the reasons why the oral cavity resists infection so w are as follows :—

1. The anatomical constitution of the epithelial coating the mouth.
2. Relative immunity acquired by the tissues constituti the buccal cavity.
3. Functional activity of the mouth.
4. The conflict of pathogenous and saprogenous micr organisms.
5. Special and microbicidal qualities of the saliva.

Items of Interest.

ts of British & Foreign Journals.

DENTAL CHEMISTRY.

By M. D. Jewell, D.D.S.

RY is the most important, yet, by the mass of our the least understood of all the arts and sciences tistry.

known that the oral cavity has been likened to a boratory, possessing facilities of material and or a variety of chemical reactions.

he construction of gold, amalgam, or other fillings in the adaptation of the finest specimens of crown, ate work, where superior skill in the treatment of f the soft tissues of the mouth might be coupled the rest, would not of necessity prepare us to deal or intelligently with an acid condition of the

e should understand the principles of chemical hen study the nature of tooth structure, that we what phenomena of chemical action we may the remedy to apply that may arrest its progress. id, the result of the decomposition of saccharine eous substances, is said to be the most potent e decay of teeth, and most frequently present in ns of the secretions of the oral cavity. It is very t an acid, but how may we determine its character, may know what will be the result of its contact utralizing agent, and whether the new product s injurious to tooth structure as the acid. If it l it is not because of any knowledge of the fact

ation of bleaching a tooth is chemical, and an elicate one, involving intricate laws of attraction n of atoms, and should never be undertaken without ledge of the chemical nature of the agents used. o be gained is the discoloration of the contents of f the dentine, by the use of an agent that will e chemical combination of the colouring matter by h, or taking from it one or more of its constituent atoms. Chlorine is the agent most frequently employed. The well known affinity between hydrogen and chlorine would easily lead us to suppose that if present, H would be the most likely to be given up by the colouring matter, thus producing H Cl, which you will recognise as the symbol for hydrochloric acid. Dr. Kirk, of Philadelphia, has investigated the subject of tooth bleaching from the standpoint of a chemist, and is on record in tones that make no uncertain sound.

The various cements in general use are chemical reagents, and in preparing them for use we perform a chemical operation. It is of importance that one should understand the nature of the elements here brought together, their relative combining value and those conditions most favourable to a free and complete chemical substitution, if one desires anything like uniform results.

A knowledge of chemistry places us in a position to judge of the merits of compounds placed in our hands, like the innumerable alloys urged upon our notice, which may be the most unmitigated frauds for aught we know.

Much has been said and written regarding mercurial sore mouth, from the action of mercury in the colouring matter of vulcanite. Chemistry teaches us how we can decide whether free mercury exists in such proportion, by the use of well-known tests.

The process of vulcanizing is chemical. Vulcanite is one of the hydro-carbons united with sulphur. Every dentist is familiar with the process, though recent literature upon the subject seems to indicate there is much yet to be learned in this most common proceeding.

We mix plaster so often that we have come to do it in the most perfunctory manner. We perform two or more chemical operations each time we attempt it.

Dental Practitioner and Advertiser.

EROSION OF THE TEETH.

By Dr. Bulkley.

ic-acid diathesis has much to do with many changes
dy, even of the teeth, hair and nails.
ver is the means in the system of utilizing the
taken in the food. It has several functions, the
hich is the conversion of part of the albumen of the
urea, which is then excreted by the kidneys. If
morphosis fails to go far enough, it will produce
. Our idea of gout is that the uric acid thus intro-
o the blood attacks the phosphate of soda and potash
nders the blood alkaline, and unites with the former
ing urate of soda, which is deposited in the joints.
inity of the blood is due to the sodium and potas-
sphates with the carbonates. When uric acid is
and poured into the blood, it attacks these phos-
d carbonates, and seizes upon the soda and potash

rd now to the part played in the production of
f the teeth by this acid state, we know that the uric
lates in the blood, and can be obtained in crystals
the serum of a blister raised on the skin. In
ases, also, urate of soda is found on the surface of
having been excreted by the sweat-glands. There-
ems to me quite probable that a secretion from the
ollicles may contain some of this same uric acid,
y then attack the phosphates of the teeth, and so
m.

while we talk of gout in connection with the subject
nsideration, we must not confine our thoughts wholly
s commonly regarded as gout—namely, inflammation
more of the joints of the body, notably the great toe.
that the gouty state begins long before there are
joint inflammations, and continues in the intervals
he attacks of the same. I think the matter should
of as the "gouty state or habit." There are many
the chain, reaching far backward; indeed, so far
first systemic changes are often lost sight of. The
begins with the faulty metabolism, largely in the
is principally due to errors in diet, although ther

are other elements of causation, such as lead-poisoni nervous exhaustion, etc., which need not be discussed here

In searching for the acid cause of this erosion of the teeth, should not content ourselves with merely inquiring if the pati has what he understands to beg out, but look for other eviden of the lithæmic or acid state of the system. A long tr of symptoms indicate gout, and it would not do for a one who is looking at a patient's eroded teeth simply ask whether they have had gout alone. There are ma other indications, some of which are quite as conclusive the uric-acid diathesis as is gouty joint disease. Such acid secretions with urinary deposits, neuralgias, palpitatio sick-headaches, and various other symptoms, which must looked for, and be taken as elements bearing on the ca Therefore the simple denial of patients having had gou not sufficient, but other elements must be looked for a rectified if we would rightly remove the difficulty.

The medical profession is running into specialties, forgetting far too much the broad principles on which good practice must rest. Many gentlemen go into specialties of the eye, the ear, the throat, the skin, gy cology, etc., and have no regard for the internal conditi of the system, but centre their thoughts and energies too exclusively upon the organs which they especially tr I look upon the dental profession as one great specialty medicine, and I think that those practising it should physicians in every sense of the word, with broad views, c having a more perfect knowledge of the contents of mouth, its diseases, and how to remedy them, than of ot parts of the body. The fault I find is, that the *special* are too often *exclusivists*, knowing or thinking far too li beyond their own limited field of practice.

Western Dental Journa

REMOVAL OF THE GASSERIAN GANGLION

By Edmund Andrews, M.D., of Chicago, Ill.

On Saturday, January 7, Dr. Edmund Andrews perfor for the fourth time, at Mercy Hospital, Chicago, his operat for the removal of the Gasserian ganglion. The patient

l furnished typical indications for the operation,
red for years with a tic douloureux of the right
had previously undergone two operations, she
ably section and avulsion of the nerve, with the
, viz.: a return of the agonizing pains in the
ut two months. When Dr. Andrews first con-
lea of such an operation, he had satisfied himself
stinate trigeminal neuralgias usually have their
ective teeth which give rise to a neuritis involv-
e inferior dental nerve and gradually progressing
ire inferior maxillary branch of the fifth nerve
hat it ascends as far as the semilunar ganglion
here, not being transmitted beyond to the brain
e difference in structure between the proximal
rtions of the fifth nerve. His logical conclusion
he removal of the ganglion could be effected, the
ffering of the patient would be relieved. After
of experimentation upon the cadaver, six different
rocedure were devised for the accomplishment
view, one of which Dr. Andrews now regards
nd is here briefly described.

f operations was rendered as aseptic as possible,
e of the scalp being shaved, and the utmost
aken to guard against infection. Beginning
ternal angular process a curved incision was
ding horizontally above the zygomatic arch,
n in front of the ear, and terminating near the
jaw, care being taken to avoid the pes anserinus.
made was turned down and stitched to the ala
the zygomatic arch was sawed through at each
d reflected down carrying with it the attached
cle; the coronoid process of the lower jaw was
ff and turned up on to the temple, carrying
attachment of the temporal muscle, and was
e scalp. Now some fat and connective tissue
containing in it the internal maxillary artery,
ed. Persistent oozing hæmorrhage had com-
h step of the operation and was particularly
t this stage; the blood would well up into the
t as fast as an assistant could sponge it away,
this masking of the parts involved, the operator
y feel his way in the dark. Search was now
inferior dental nerve which should serve
oramen ovale, but it was not found, owi

doubt to the fact that it had been entirely torn away at one of the former operations. Therefore the finger of the operator felt for the posterior sharp edge of the external pterygoid plate of the sphenoid bone and passed up to its base, near which the foramen is situated, and through which a probe was passed, the ganglion being transfixed thereby. Just external to the foramen ovale is a triangular free space on the under surface of the base of the skull, and here a specially devised trephine with a long shank and a long centre pin was applied, and the button of bone removed. The narrow isthmus of bone intervening between the trephine hole and the foramen ovale was bitten away with a pair of rongeur forceps, and through the large opening thus made, a surgical spoon was passed and the ganglion scraped away.

In closing up the wound, Dr. Andrews advocates wiring together the bones sawed through, but in this particular case it became necessary to dispense with this procedure, owing to the manifestation by the patient of symptoms of collapse—due chiefly to the hæmorrhage, partly also to shock—from which however, she rallied nicely after being put to bed, receiving hypodermic injections of digitalis and strychnine and the application of heat.

Time required for the operation was about two hours. To the bystander it seemed a formidable one—as it was a tedious one to the operator. But it must be remembered that the patients suffering with this trouble will invite almost any conditions whatever that will offer them escape, and always say that if the operation will not bring them relief they prefer not to awake from the anæsthetic.

The Dental Register.

ANKYLOSIS OF THE JAW.

By Arthur E. Barker F.R.C.S., Eng.

The operation to be described is practically the same as that advocated many years ago by Professor Humphry of Cambridge, and which has been successfully performed by himself and others since, notably in two most interesting cases published by Mr. F. Page of Newcastle ; but in spite of

nt results obtained in these cases, and to judge of
een uttered and written, there seems still to be
e doubt as to which of the several operations for
f the jaw is really the best. In the hope of help-
solution of the question the following case is

g lady aged fifteen was sent to me from New
y my friend Mr. Anderson, of Christchurch, in
891, with a request that I should, if possible,
by operation, of a condition of ankylosis of the
was causing her serious inconvenience. When
old she had fallen down a staircase about fifteen
urt in some way the left side of the jaw, which,
as said not to have been fractured. Stiffness and
elt in the joint for some time and then passed off and
was thought of the injury until comparatively
hen relatives who had not seen her for some time
k by the deformity of her jaw and the whole left
face. The latter appeared much smaller than the
and the chin was tilted to the left, as was evidenced
xternally but by the lower incisor teeth, which
st a quarter of an inch to the left of their fellows
er jaw. Besides this, the movements of the jaw
ing limited, and at the time Mr. Anderson wrote,
91, the incisor teeth could only be separated about
f an inch. When I first saw the patient, in October
teeth could hardly be forced apart even a quarter
and there was no lateral movement. A photograph
s time shows the maximum amount of separation and
ormity of the face. This was plainly due to arrest of
t of the jaw on the left side, chiefly affecting the
ramus. The latter was three-quarters of an inch
n its fellow. The left maxillary articulation was
rged, apparently by a mass of bone thrown out
the right appeared quite normal to the touch and
The patient appeared to be in excellent health,
ry seriously inconvenienced by the closure of the
nsequent inability to masticate food. It was found
rial that no forcible separation of the jaws could
patient ; it was also clear that any operation on
tion would necessitate the removal af a considera-
of new bone. In selecting the particular opera-
edy this condition I was moved to aim at forma-
w joint in the old situation by the following consi-

derations. The patient was young and healthy and the p
of repair ought to be as excellent in this as in the case
resections of joints. If successful it certainly would
most perfect result of any both as regards function a
mum of deformity. This operation could be done wit
asepsis, seeing that the wound would communicate in
with the mouth and would be completely under
externally. The interference with the branches of t
nerve would be very slight, with a short horizontal
immediately over the joint. In a word, the operatio
diseased joint itself appeared more scientific in ev
than section of the bone lower down or from the mou

On Oct. 9th, 1891, the following operation was pe
Every possible precaution having been taken to sec
fect asepsis, I first made a one-inch incision imn
below and parallel to the zygoma. This was onl
through the skin and fascia and then with forceps and
I separated the soft tissues upwards and downwards,
cutting, until the large rounded mass of bone invol
joint was cleanly exposed. I avoided cutting the sof
this stage of the procedure in order to spare the bra
the facial nerve as far as possible. The mass of bone
appeared to weld the two parts of the joint togethe
completely. This I removed with the aid of a ch
mallet until the neck of the bone was visible. This w
hypertrophied, being about two-thirds of an inch th
order to obtain free movement it was now necessary
away the neck of the bone freely and also the e
articularis and the bone around. Part of the inter
cartilage was found, but was atrophied. When all th
matter which impeded the play of the jaw had been
from about the articulating surfaces, and the latter h
cut clean, the wound was dried out and closed carefu
fine silk, a strand of the same material being left bet
edges for drainage. A dressing of sal alembroth gau
pleted the operation, which had been tedious on ac
the care which had to be exercised to guard importa
tures from injury during the chiselling, especially t
nerve. No vessels required ligature and the bleeding
the whole operation was insignificant.

There is little to record about the convalescence ex
it was uninterrupted. The wound healed without any
ation and the stitches were removed on the 16th, th

peration. The face on the left side was a little
some days, but was not very painful. The tem-
ver rose above 99.8. for the first three days, and
was almost always subnormal. There was slight
ie inner fibres of the left orbicularis palpebrarum
hat the patient could not quite close the lid on
but after a little time this grew daily less and
ally the muscle quite recovered itself at the end
ks. No attempt was made to force or keep the
at first by gags, &c., and the patient was not
en the mouth in order that the new joint should
; rest during the healing of the soft parts at the
ation. I find in the notes, however, that on the
the patient could easily open the mouth half an
aily after this she moved the jaw with less and
On the fourteenth day I inserted a gag I had
blocks of pure rubber, supported between the
by stout silver wires and a loop of silver wire
heeks at each angle of the mouth. This gag I
rk admirably, and it could be worn by the patient
hout discomfort. In the course of a few days I
blocks of rubber as the jaw was becoming daily
le, so that by Nov. 6th the distance between the
h on *voluntary* movement was one inch. By
vith the fingers between the teeth I could increase
on, but this I rarely did, preferring not to strain
uctures too much. The patient was now encour-
daily how much more the incisor teeth would
n on the previous day, and I gave her a graduated
od soft enough to show the marks of the teeth when
ween them with the mouth open to its full stretch
This gauge showed at the end of a couple of months
stance between the incisors was an inch and a
with a little help an inch and five-sixteenths, and
ined so up to the time of the last hearing from Mr.
n Dec. 17th, 1892. I cautioned the patient to
use the gag at night for several months after her
Iew Zealand in February, and this she did; but
une, 1892, Mr. Anderson said she could do with
the movements, vertical and lateral, were free,
on between the incisors remaining at one inch and
I find that in a healthy young girl of about this
ance between the incisors with the mouth wide
he average not much more than this, so that this

patient may be said to have recovered almost the normal amount of movement in the jaw. If it should be proved by further experience that the movements of the jaw remain free after this operation, there can be little doubt that it will be preferred in the future to all others. It has the manifest advantage over all operations from within the mouth that it can be kept from suppurating. This, besides diminishing immediate risk, must improve the prospect of ultimate free movement. Experience of aseptic excisions of joints in recent years, teaches us that we have a far better prospect of restoration of function than in the days when suppuration followed excision in most cases. Again, the advantage of this method over that which aims at establishing a false joint at the angle of the jaw must be obvious, inasmuch as the new joint is made as nearly as possible at the seat of the natural articulation, and, consequently, the functions of the muscles and the jaw itself are as nearly as possible restored. The chief risk of the operation now described is that the facial nerve may be injured, but, as is proved by this and other cases, notably by those recorded by Mr. F. Page, this can be avoided by care and by a horizontal incision. The slight transient paresis of the orbicularis muscle which followed the resection in the above case was probably due to mere stretching of some nerve filaments which soon recovered themselves. Writing on Dec. 17th, 1892, Mr. Anderson says that the scar can hardly be seen. The patient can now masticate the food as easily as anyone with normal jaws. She can open and close the mouth to the widest extent without pain or inconvenience. The disfigurement noticeable before operation is far less marked now, owing to development of the muscles. The interval between the central incisors is 1 3-16ths inch with the mouth open, and the interval between the upper middle incisors corresponds to the middle of the right central lower incisor with the mouth closed.

The Lancet.

DISEASES OF DENTITION.

By W. C. Barrett, M.D., D.D.S.

on is that their history is like that of the snakes of
ere are none. Not that children do not die
period of dentition, but I do not believe that they
hing. Statistics show that by far the larger
of the human family perish before they have got
deciduous teeth, and the average physician says
se is—teething. In my humble opinion this is
fuge of unthinking, heedless, or incompetent
. The men who assert this may be too indolent
ant to weigh all the factors that enter into the
so easy to attribute the oft-recurring deaths to a
ondite cause, to accept a ready-made diagnosis
xculpate the attending physician, and be accept-
bereaved family, that perhaps it is but human
eize upon it.

what is the character of these diseases of child-
are so fatal? They belong to disturbances of
d nutrition. They are diarrhœa and dysenteries,
vers which accompany them. What influence,
ible reflex disturbances, can the progression of the
upon the digestive tract? If there are disorders
lentition, they will necessarily be of the nervous,
the nutritive system. They will not manifest
as diarrhœas, but as reflex nervous disorders, that
parent to every physician who makes an intelligent
n of the subject.

aid that the child gets new teeth because it is at
ime getting a new stomach. The one is but indi-
he other. I reminded you that the undeveloped
rgans cannot prepare for assimilation matter that is
partially digested. That the mother's milk, or in
the malted or peptonized foods, are the only ones
h the formative apparatus of the young child can
cope. And yet, you know how often the infant
even months is fed from the table, with the amy-
tter which it is utterly unable to convert. What is
uence? The ingested material lies a foreign sub-
he stomach. The child rejects it at first, because
ches it that it is unfit for use. But the injudicious
nurse persists, until after a time an appetite is

created, as in later life one for tobacco or whiskey is acquired. When first swallowed this matter is regurgitated without nausea. This method of relief soon fails, and the matter is passed the other way. It acts as an irritant, as are all cathartics, and is hurried through the digestive tract, and a diarrhœa is the result. Continued persistance in giving such food results in a chronic disturbance, or a dysentery, with the fevers which invariably accompany these disorders. They are but the result of the efforts of nature to rid the system of the foreign matter. If it be hot weather the condition is exacerbated, and the child dies of the digestive disturbances, or of the spasms and convulsions which are their reflex sequelæ, or at best survives to become a confirmed dyspeptic, a state even worse than death.

Study the statistics of this or any other great city, and see what are the times of greatest mortality. It will be found that during January, February, March and April, in this climate, the death rate is low, and does not vary materially from month to month. But in May and June there is a sudden jump upward, and perhaps ten times the number of children die in the same space of time. In July and August the death rate drops a little, while in September it takes another upward leap, to fall very rapidly in October, and in November to return to about the level of January and February. More children die in June and September than in all the other months of the year, May or July possibly disturbing the figures. And yet as many children are cutting teeth in January as in June. Dentition does not advance more rapidly in September than in November. What is the cause of the greater mortality in the one month then in the other? It cannot be teething, because that is constant. My answer is that in May and June come the early spring vegetables, and the adult members of the family change their diet. Among the poor of the great cities, where the rate of infant mortality is so high, this transition is very grateful after the table-fare of the winter, and they think it too bad to deprive the baby of that which is so palatable to themselves, and so the little one is fed to its death. Immediately upon the accession of the early vegetables, begins the high death rate from diarrhœas and gastric disturbances. Again, in September fruits and vegetables are brought into the market, and once more the death rate climbs up. These things afford food for thought, and it is the bounden duty of the dentist to examine into them, and see if it be true that the mere acces-

brings such widespread death and disturbance to
ace. We all know that there are almost no irreg-
vide departures from the normal in the deciduous
e are almost exclusively confined to the permanent
l hence we might expect that with the coming of
eeth the digestive troubles would be intensified,
due to that cause. Yet this is not the case,
son is, in my opinion, that the era of a more
elopment of the digestive organs has arrived,
is is indicated by the advent of these larger
highly organized teeth. I desire to be placed
asserting that, were it not for the lack of discern-
ning the so well marked eras of our life, and the
check to development which the young child
abnormalities of the second dentition would be
umber.

eems amazing that these so-called "summer com-
uld so long have been attributed to teething.
doubt that occasionally the teeth may form one
ne disease which seems unconnected with their
But such cases must be exceptional, and can only
general disturbance through nervous complica-
even possible that a delayed tooth may, in unusual
fect the digestive tract, but it must be secondary,
the predisposing and not the direct cause. I am
inced that the wild tales related by some writers
f mistaken diagnosis.

our attention to these things, and point out to you
t field for research and observation is here offered
n set medicine right in one, at least, of the many
hich she has made. We are not bound down by
ed traditions or tied to any inherited creed. The
in is ours to explore *ab initio.* We shall not be
elves or our profession, if we refuse or neglect to
ese matters for ourselves, from the standpoint of
fessional experience, and in the full glare of that
which our special opportunities for study afford

Dental Practitioner.

TREATMENT OF PROXIMATE SURFACES.

By Dr. W. J. Brady.

Too little thought is given to this by most men, and w is more important too little care in work. Take a case wh a cavity exists in the distal surface of a central incisor. Fr the front this cavity shows but little, from the back not at The cavity is not deep, the pulp is not inflamed ; in sh the patient has just noticed for the first time that there i cavity there. It is a very common case, and the conditi are as favourable as we usually find for making a good d ble operation, which should preserve that surface of the to from any further trouble for ten years or more. But usual treatment falls far short of that result. About th years is the average length of life of the usual gold fill inserted in such a cavity. Let us see how this short-li filling is put in. With little or no separation, the tooth is away on the labial surface enough to allow insertion of gold easily. The thin edges of the cavity are trimmed a slightly, and the lingual wall left standing entire, so the g may be packed against it easily. The grooves or under for retaining are made where they can be made most easily, when filled the filling looks fairly well, and may be well polis and smoothed down. But in about three years or less, find that the tooth re-decays around the filling, and if it stood long enough the whole lingual wall breaks down. ought to be possible to preserve this tooth longer than th years. In another form of treatment which is someti given to this case, to avoid showing the filling, the toot cut away from the lingual side and the gold inserted from back. These cases are worse failures than the first. T not only fail to preserve the tooth long, but the gold show through beneath the enamel in a little while, givin dirty colour to the tooth that makes it look as though cavity was not filled at all. The inaccessibility of this ca is against its success. It is hard to fill such a cavity at and impossible to give the proper treatment to the en surface. There are various modifications of these two form treatment, some of which are steps in the right direction, they are rather short steps. It is not whether short or c sive gold is used that these cases fail. It is not whether teeth are separated or not ; it is not whether the plug chipped the edges of the cavity or never touched them that they fail; it is not whether the retaining grooves were made right or not, nor whether the gold was perfectly condensed that they did not last. The great fault above all other faults, and greater than all the others put together, is that the cavities were not made the right shape, were not extended over the surface of the tooth to gain certain important points which determine whether or not the filling will last. If the cavity is only extended properly so that the junction line between gold and enamel comes *in the proper place* the work will stand, even if the operations of preparing the undercuts, packing the gold and finishing the filling be very indifferently done.

It is true in *every instance* that when the junction line between filling and tooth substance is extended properly, the filling lasts well, if the work is even passably well prepared and finished.

Where are we to extend the boundaries of this cavity? Briefly, extend the filling both front and back till the junction line of the filling will be constantly kept clean by the action of the lips or tongue, and keep this line far enough away from the point of contact with the opposite tooth that food will not be lodged along this line of union and so be held to ferment and form acids.

The entire surface of the tooth should be remodelled, and indestructible gold left for the opposing tooth to rest against, instead of frail tooth substance. If nature does not give indestructible surfaces to the teeth, we should remodel them and make these surfaces right if they need it. A tooth need not be rendered unsightly, and still have the whole proximal surface remodelled, if it is properly separated.

Separation is absolutely necessary in most cases for a perfect result, to allow the introduction and proper working of the gold. Now, a few words about the preparation of the cavity for the retention of this filling. Too often deep grooves or undercuts are made in weak places, notably on the lingual side, which so weaken the walls of the cavity that they break down and the work fails long before its time. It is possible to dovetail a filling in place with the dovetail nearly all on one side. The lingual wall is nearly always weak, the labial wall quite strong. We can make most of the undercut on the labial side, and yet when the filling is done it will be impossible to remove it without breaking away part of the tooth. At the cervical border the mistake is often made of making a deep groove. This is nice to pack gold into, but dangerous on account of the liability of fracture in filling.

The Dental Review.

MUCOUS "PLAQUES" IN THE MOUTH.

La Medecine Moderne publishes a lecture by Professor Fournier upon these patches, the study of which is of importance, "as much because of their frequency as from the danger which they afford of transmission." Mucous patches are, indeed, a *frequent source of contamination*; it is by their means that a large number of extra-genital chancres are produced either by direct or indirect contact. They are manifestations of the secondary stage of syphilis; they may, however, appear later in some cases, in the fourth, fifth, or even eighth year. In hereditary syphilis mucous patches may coincide with tertiary manifestations, and in such cases the order of the development of the disease is no longer followed.

The primary cause, as is well-known, is syphilis; but there are some causes which must be remembered. They are:—1st, Alcoholism; 2nd, A bad state of the mouth; 3rd, and especially, tobacco. Any part of the mouth may be affected, but there are three favourite spots:- 1st, the tonsillar region; 2nd, the tongue; 3rd, the lips.

Symptoms. Mucous patches present the same characters in the mouth as in any other part of the body. Four types are recognised:—1st, the erosive type; 2nd, the papulo-erosive; 3rd, papulo-hypertrophic; 4th, ulcerative. These four types are far from being equally frequent. The erosive type is nineteen times more common than the others.

What is a mucous patch? Imagine a tiny blister. It is merely a slight erosion on the surface of the skin, an epithelial abrasion. As to size, the most frequent is that of a lentil, or small bean. As to shape, it is round, sometimes oval, or elongated. As to colour, it is that of a blister with denuded cuticle. The base is smooth, sometimes a little streaked, and there is no induration of the base. Such is the *erosive* mucous patch. In the *papulo-erosive* type there is an exaggeration of the preceding. When well-marked it shows bosses ; it is often seen upon the tongue, to which it gives the appearance of a toad's back. Finally, the ulcerating form is a loss of surface without any special character.

Mucous patches vary in number and extent, but the colour is the most variable. We have said that the most usual colour is red, the colour of denuded skin. But pink, and pinkish-grey patches are seen. On the other hand there are crimson ones, and in addition, one may meet with a pale or actually white appearance. From pinkish-grey to porcelain white all tints are met with. They are also compared, for descriptive purposes, to a drop of dried collodion, to milk, to a schirrus colour, and, a matter of much importance, to the colour of the false membranes in diphtheria, whence the term diphtheroid syphilitic patches. One sometimes sees these pale patches upon the lips, upon the tongue, but much more often on the edges of the isthmus of the fauces, and upon the tonsils. In this last case, and if there are swollen tonsils, we have an absolute picture of diphtheria, and a mistake is possible. In certain cases, indeed, the diagnosis can only be made by means of a bacteriological examination.

Revue Internationale D'Odontologie.

A New Dental Science.—Alabama has a Dental College located at Bridgeport, which has one department not possessed by other schools. It is but a lectureship, though it is filled by a teacher who is probably a "Professor" by divine right. At any rate he is thus announced, though he has no other title. He is "Lecturer on Animal Magnetism."

Dental Practitioner.

THE OPERATIVE AND THERAPEUTIC TRE MENT OF TEETH IN WHICH THE PUL CHAMBER IS PENETRATED.

By Edmund Noyes, D.D.S.

> "A tooth that has ached deserves to be killed."
> "No pulp that is alive should ever be destroyed."

These two statements represent the extremes of o
respecting the treatment to be given to living pulps tha
become exposed or so nearly so as to receive marked irri
from external agents.

Brief aphorisms like these, that may be almost unive
applied, are very attractive, but they seldom fairly rep
the truth. The fact that men can be found to enunciat
like these, at antipodes to each other, relating t
same subject, is presumptive evidence that the
lies at various places between the two and mu
determined for each case separately by the exercise of
ledge, good judgment and careful attention to the c
stances relating to it.

When a tooth is before us for treatment in which th
is still alive, but has been more or less injuriously affec
the action of external agents upon it, this question of i
servation or destruction is at once presented for dete
tion, and so many circumstances, difficulties, dange
probabilities must be considered and given their proport
importance in relation to it that the decision is not
easy, and in many instances at least, it cannot be ex
that there will be entire agreement among all good
tioners. The general grounds upon which an opinion
rest may be briefly stated, and every one must weig
measure them for himself in their application to ind
cases.

Pulps which have not been quite uncovered but ha
come somewhat irritated and perhaps occasionally p
from the effects of thermal changes or the irritations
by the contents of the carious cavity, conveyed thro
thin layer of dentine, whether sound or considerably so
by decalcification, may almost always be saved. Ther
be a combination of adverse circumstances that will occ
ally justify the extirpation of even such pulps as these,
instance, if the decay is such that there must be a very
mass of filling in close proximity to it, and a cav

ated or shaped as to make it impossible to interpose any
reciable amount of nonconducting material, especially if
e be added to this an unfavourable constitution or con-
on of health, with such age that the pulp is no longer of
great value to the tooth. There may be a few instances
h ch extreme difficulty to find secure anchorage for a
ng may be allowed to have some influence upon the deci-
whether to save or destroy. It may be inferred by some
if any of the pulps just described, which have not been
nded, and are in comparatively favourable condition;
be destroyed with propriety, then *all* those which are
ally exposed, or have become more seriously irritated or
amed, should be extirpated without hesitation, but this is
from being the case.

ge is the most important consideration relative to the
ssity of the pulp to the welfare of the tooth. We occa-
ally find a pulp exposed so soon after the eruption of the
h that the root is not fully developed and the opening
ugh which the pulp vessels enter too large to be called a
men, being still the full size of the pulp canal. If such
lp be removed the opportunity for complete structural
elopment is lost, both as respects the unformed end of the
, and the proper completion of the calcification of the
tine. Of course in such cases every possible effort
ld be made to save the pulp and even desperate
nces may be taken if there is a fair opportunity
atch the cases; the loss of such pulps being usually fol-
ed by the loss of the teeth either immediately or in a few
s. Pulps which have been previously free from pain and
freshly exposed by an aseptic instrument may almost
ays be saved if carefully treated, and there is a fair oppor-
ty to give them suitable protection against the force of the
ation and from thermal changes afterward, but if no care
been taken to disinfect the carious cavity, and the instru-
t happens to plunge somewhat into the substance of the
instead of merely scratching the surface, the probability
at it will suppurate or die from the effects of inflamma-
, because it will not be practicable to certainly follow with
nfectants so deeply as the infection may have been carried
he instrument. A large proportion of such exposures
therefore be wisely followed by an application of arsenic.
xposure of the pulp is complete, of considerable extent and
uch duration as to cause chronic irritation, the cases are

very few indeed in which the attempt for its preservation
worth while.

An important reason against the preservation of doubt
pulps, especially when desirable on other grounds,
their observed intolerance of large masses of metal in cl
proximity. This manifests itself sometimes by their dea
(perhaps very soon, or, perhaps, only after a number
years), sometimes by neuralgic pains, more or less seve
and of longer or shorter continuance, and occasiona
especially if there are a number of large fillings near togeth
quite impossible to locate with certainty until disease
death proceeds far enough to cause some peridental irritati
Sometimes it appears to be the cause of the formation
pulp stones.

The comparative certainty of results and immunity fr
subsequent trouble that usually attends the extirpation
pulps and filling of root canals if the operations are m
with intelligence, skill and patience, has operated v
powerfully in late years to discourage the attempts to s
alive, diseased or doubtful pulps. The discussion of p
capping used to be carried on as if it were about all inclu
in the problem of treating the pulp and making the operat
in such a way that death would not follow at once, or v
soon. The fact is that a great many cases in which the p
lives long enough in apparent health to show that the ope
tion of capping was perfectly successful, either die afterw
or give rise to so much neuralgic pain, often difficult
impossible to locate, as to leave no reasonable question t
extirpation would have been better in the first place.

It will be inferred that the writer goes a long way tow
a belief in the aphorism, "A pulp that has ached deserve
be killed," but the exceptions are rather numerous and so
of them very important.

The Dental Review

Reports of Societies.

NATIONAL DENTAL HOSPITAL, STUDENTS' SOCIETY.

The last ordinary meeting of this Society was held on Friday, May 12th. Mr. W. Rushton, President, in the chair.

The minutes of the previous meeting having been read by the Secretary, and confirmed, the usual form of welcome was given to the visitors present.

Mr. Lavan was unanimously elected a member of the Society, and the following gentlemen were proposed for membership of the Society :--Messrs. Burroughs, Brett, Jones, Messenger, Relph, Sugden, Sunderland, and Pedler, to be ballotted for at the next meeting.

The President announced that Mr. Horace Johnson had resigned from the Council of the Society, and that Mr. Tice had been appointed in his place.

The President also announced the following additions to the Library :—" Underwood's Notes on Anæsthetics," (presented to the Society by Messrs. Ash & Sons, Ltd.) ; The Dentists' Register for 1893 : and The Transactions of the International Congress on Hygiene and Demography.

CASUAL COMMUNICATIONS.

Mr. **SIDNEY SPOKES** shewed, by means of the lantern, some very interesting slides.

No. 1, was a photograph of a patient suffering with an abscess arising from a lower molar root ; the patient had been advised to have the root removed, but had neglected to do so, with the result that the abscess had burst on the outside of the cheek, and disfigured an otherwise good-looking young lady.

No. 2, was a section of an incisor prepared by the Weil process, showing a pulp stone *in situ*, the case being of interest in connection with the clearing out of the nerve canal.

Slide 3, was a section through the lower jaw of a mo showing the relation of the temporary to the permanent at the time of absorption of the temporary teeth.

No.4 showed a section of the upper jaw in a child six n old, showing the temporary incisor just appearing throu gum, also showing how far calcification had proceeded permanent incisor.

No. 5 shewed a specimen of osteo-dentine in a fossi of a fish ; the section had been ground down by a D miner.

The President then called upon Mr. E. W. Rought his paper on "The Bacteria of the Mouth," which we on page 481.

A discussion followed in which Mr. Cosens, Dr. Ma Mr. Spokes, and the President took part. Mr. Ro replied, and a vote of thanks was passed to him Paper, and to Mr. Cosens for sending and worki lantern.

STUDENTS' SOCIETY, LIVERPOOL DENT HOSPITAL.

A meeting in connection with the above was hel 17th, 1893.

The chair was occupied by W. H. Gilmour, Es Vice-President, and there was a good attendance of m and friends. Amongst those present were Messrs. Ed Councell, Pidgeon, Osborne, Bates, Capon and Parsons chairman read a letter of apology from Mr. Phillip Vice-President, explaining his absence, and imme called upon the Secretary to read the minutes revious meeting, which having been confirmed, mmunications were invited to be brought forward.

n response, Mr. Woods exhibited a fine specimen s which had been removed from a patient in the h giving a description of it, Mr. Bates proceeded to be a remarkable case of fracture of the lower jaw in a ten months old.

interesting discussion followed, in which Messrs. cell, Osborn, Capon, Parsons, Byrne, Woods and rds took part.

. Bates then read a letter from Mr. Coysh apologising s absence, and suggesting that the advisability of holding ical evening be brought before the Society. This was ged to be held Friday, March 24th, and it was decided he Council should arrange with Mr. Coysh the nature proceedings.

. Scholefield then read his paper on "Treatment of ularities," which was freely discussed by Messrs. our, Woods, Capon, Parsons, Bates, and Edwards.

vote of thanks having been awarded Mr. Scholefield s paper, the proceedings terminated, the next meeting announced for March 17th, 1893.

Friday, March 24th, in connection with the above, was urated very successfully, a series of clinical meetings.

large gathering of members and friends was present, the cil of the Society having invited the profession of Liver- and district, and among the visitors were most of the ital Staff, and Messrs. E. Osborne, E. M. Phillips, W. hews, S. Westerton, C. J. Allin. F. W. Carson, J. P. rts, Kellett Smith, and W. Ladyman.

the course of the meeting Mr. W. Matthews demon- d the use of non-cohesive gold in front teeth, and filled al cavity in a left central with cylinders used non-cohe- . The rubber dam was adjusted, though the demonstra- pointed out that this was not essential. The filling was leted with tape used non-cohesively, and was finished burnisher and discs. The operation was most successful he method which was carefully explained by Mr. Matthews admired.

r. C. J. Allin demonstrated the making of a gold crown left lower molar after the ferrule was made; it was with composition and bitten upon by the patient. This carved into cusps and mounted on a plaster cone and a taken and cap struck up. The cap thus had an excellent articulation and a very artistic appearance. It was th soldered on, and the operation completed. Several no points were brought out in Mr. Allin's method.

Mr. Mansell showed the use of plastic fillings in a de upper molar. He filled the roots with oxychloride, the cro with Submarine alloy, and covered the surface with cro alloy, carving the cusps and making an extremely natu shape. This operation was much appreciated.

Mr. Bates made a glass inlay for a flat cavity in an up central and the result was very good, though owing to insu cient gas supply, the fusion of the glass was not so perfect he desired. This demonstration also was followed with mu interest.

In the side room, Mr. Phillips communicated a case antral empyema and shewed some very ingenious tubes apparatus used in the treatment of it. Mr. Councell shew models and apparatus used in two complicated regulation ca and described the treatment and result.

Mr. Coysh showed a method of repairing a broken natu tooth with living pulp without destroying the pulp, and repairing a broken artificial tooth on a bridge or pivot with removal from the mouth.

After the demonstrations, a meeting was held and discuss entered into by Messrs. Mansell, Pidgeon, Westwor Osborne, Woods, Parsons, Byrne, Coysh, Allin, Mapplebe Matthews, Bates, Phillips, and Guyler, during which qu tions were asked and answered upon the demonstrations points connected with them.

A vote of thanks to the demonstrators was proposed Mr. Parsons on behalf of the students, and he expressed great pleasure at the new departure of Clinical meetings his sense of obligation to the demonstrators who had gi their time and labour so ably and willingly. This seconded by Mr. Osborn on behalf of the visitors, and he sp of the strong feeling among those present as to the advi bility of continuing these meetings. The vote was pas with enthusiasm, and Mr. Coysh, in acknowledging it, urg the claims of the library on those present.

A vote of thanks to the president proposed by Mr. Edwa and seconded by Mr. Gilmour.

After the business was concluded the President ent tained the visitors to light refreshments, and a most instr tive and enjoyable evening was terminated. The meeti ing voted a decided success.

Dental News.

NONSUITED.

In the Lancashire Court of Chancery, on the 16th inst., before Vice-Chancellor Robinson, Edward Alfred Davies, dentist, Rodney Street, sued George Ewing, plumber and painter, Rodney Street, Liverpool, to obtain an injunction, restraining him from interfering with, or diminishing the light of plaintiff's premises.

It appeared that the plaintiff some time ago, purchased a leasehold house in Rodney Street, Liverpool, for £1,300, and used the ground floor as a dental operating room. The defendant occupied a house opposite, and recently added another storey to it. The plaintiff contended that the addition diminished the light of his operating room, which was of great importance to a dentist, although it did not interfere with the residential character of the house.

The defendant handed in his diary in which he had made entries showing that from January until March last, the blinds of plaintiff's house had been drawn down about a foot and a half during several hours of the day.

His Honour said he had visited the street, at the request of the parties interested, and he had come to the conclusion that it was out of the question to grant an injunction, as the injury, if any, was infinitesimal, therefore there would be judgment for the plaintiff with costs.

ROYAL COLLEGE OF SURGEONS IN IRELAND,

DENTAL EXAMINATION.

The following gentlemen having passed the necessary examination have been admitted Licentiates in Dental Surgery of the College.—Mr. S. H. P. Hordern (Leamington) and Mr. J.T. Pycroft (Rochdale).

APPOINTMENTS.

John P. Roberts, L.D.S. appointed Demonstrator t Liverpool Dental Hospital.

A. Alford Sarson, L.D.S., has been appointed Hon. Co ing Dental Surgeon to the Llandudno Cottage Hospital F. Vincent Walker, L.D.S., Eng. and F.P.S.G. Dental geon to the same institution.

VACANCY.

Victoria Dental Hospital, 16, Devonshire Stree Saints, Manchester.—The post of House Dental Surge vacant. Applications to be made to the Honorary Secr on or before the 12th inst.

To Correspondents.

1. Communications intended for insertion in the ensuing number must warded to the Editor, at the Offices 289 & 291, Regent Street, L W., by the 8th and 23rd of the month, and must be duly authen by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and addre always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessa age stamps are forwarded.
4. It is earnestly requested of our correspondents that their communi be written on one side of the sheet only; and we also beg particular attention to the importance of a carefully-penned si and address.
5. All communications relative to subscriptions and advertisements a addressed to the Publishers, Messrs. J. P. Segg & Co., 289 Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYM subscription as under:

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British Journal of Dental Science.

No. 610. LONDON, JUNE 15, 1893. Vol. XXXVI.

A DESCRIPTION OF Dr. RÖSE'S MODELS OF THE DEVELOPMENT OF THE TEETH.*

By Mr. J. Howard Mummery, M.R.C.S., L.D.S.

It may be remembered that in my address in January last, I drew attention to some investigations of Dr. Carl Röse, of Freiburg, in Baden, on the development of the teeth of man, and that I then said that copies of the models prepared by him were on their way to England, and that I hoped soon to be able to present them to our Museum.

The copies are made by Dr. Ziegler, preparer of anatomical models in Freiburg, and as none were ready when my order came, they had to be specially prepared, and did not arrive in time for the meeting in January.

I thought that it might be interesting to the members of the Society to have a short explanation of these models, which are now upon the table, as they require some little preliminary study to render clear the points they are intended to elucidate. I have also photographed them, and prepared a small set of lantern slides, which I have coloured similarly to the models, to render the explanation a little clearer to the meeting.

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* Read before the Odontological Society of Great Britain.

The special point about them is that they are modelle microscopical sections by a method known as Born's of modelling, and used a good deal on the Continent study of embryos. There are many modifications method, and I do not know what particular process wa by Dr. Röse, but the results may be obtained in the fo way :—

Serial sections of the object to be investigated are c an automatic microtome, such as the "Cambridge until the whole of the object to be modelled has been These sections are then separately photographed, every so photographed being magnified to the same exten have then a series of photographs of the whole thic the object, arranged in serial order. Sheets of wax taken, the thickness of each sheet bearing a certain relation to the magnification of the section ; that is t the sections are magnified 50 times, the wax plates 50 times thicker than the sections, so that the resultin shall correspond in size with the original object i dimensions. By means of transfer paper the outline photograph is transferred to the wax, and the wax c cut out along these outlines with a knife.

The pieces of wax so cut out are placed one upon in their proper order, and their edges united by the h warm spatula. We thus have a model in wax of the object, which will be magnified to the same extent i direction as the section was magnified in the photogra

In practice it is not found necessary to take every of the series in constructing the model, as this would an unduly long and tedious process ; but very accurate can be made by using every third, or every fifth of the series, a corresponding calculation being of made for the proportional thickness of the wax plate.

In his printed description of the models before us, Dr

he present models, the 'zahnleiste' [tooth band or
mina of Magitot], and the tooth rudiments were
ied from the original section models, whilst for the
of the relations of the parts of the jaw and mouth
nd 4 were modelled from nature.”

rightly to understand these models we must
that the epithelial structures, and these alone, are
, which makes them somewhat puzzling on a first
The portions of the tissue belonging to the
such as the dentine papilla, are not represented,
own as a hollow space.

uring of the different parts is as follows :
—Epithelium of the mouth, of the jaw, and of the

-The “zahnleiste” or “epithelial lamina.”
-The epithelium of the outer surface of the tooth
epithelium of the enamel organ.)
ed.—The inner epithelium of the enamel organ.
The enamel pulp—gelatinous tissue of the enamel
llate reticulum).
—The calcified enamel.
The calcified dentine.

ibing the models, I propose to make use of a trans-
e descriptive paper accompanying the models, and
e's original paper, “Ueber die Entwickelung der
Menschen,” published in the *Archives für Mikros-*
Anatomie for 1891, Band xxxviii.

describing the models it may be well to mention the
views held as to the mode of development of the
ns from the original epithelial band. Three princi
have been held :—
t stated in Tomes' “Dental Anatomy,” and, I be-
erally taught in England ; that the permanent teeth

The sp
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method, ar
by Dr. Rös
way :—

Serial sec
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These sections
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relation to the ma
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50 times thicker tha
shall correspond in s
dimensions. By mea
photograph is transferr
cut out along these outli

The pieces of wax so c
in their proper order, and
warm spatula. We thus ha
object, which will be magn
direction as the section was n

In practice it is not found
of the series in constructing th
an unduly long and tedious proc
can be made by using every
of the series, a corresponding
made for the proportional thickne

In his printed description of the n

[illegible] from the neck of the enamel organ
[illegible]

[illegible] that the permanent tooth germs
[illegible] primitive inflection, without a
[illegible] tooth germs.

[illegible] by Dr. Röse that both tempora
[illegible] their origin from a common
[illegible] the "zahnleiste."

[illegible] band he describes as being
[illegible] two portions—one, which is th
[illegible] passing almost perpendicularly i
[illegible] connected with the formation of
[illegible] the "lip furrow band"), and
[illegible] almost horizontally backwards to fo
[illegible] zahnleiste).

[illegible] view, which we have to consider
[illegible]—there is an uninterrupted
[illegible] all round each jaw as a continuo

[illegible] teeth do not push themselves
[illegible] portion of this epithelial ba
[illegible] jaw they advance from
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[illegible]d off

[illegible]

[illegible] At [illegible] days [illegible]
ds, lying [illegible]
ng perpendicularly [illegible]
he other, passing [illegible]
nd."

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[illegible] row band
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[illegible] irection
[illegible] wards in

proceed by growth from the neck of the enamel organ of the milk teeth.

(2) Baume's view: that the permanent tooth germs develop from the remains of the primitive inflection, without any connection with the temporary tooth germs.

(3) The view held by Dr. Röse that both temporary and permanent teeth take their origin from a common "tooth-band," which he calls the "zahnleiste."

This original epithelial band he describes as being divided in an early stage into two portions—one, which is the flatter portion of the band, passing almost perpendicularly into the lip and jaw, and connected with the formation of the lip furrow (which he calls the "lip furrow band"), and another part which passes almost horizontally backwards to form the real tooth-band (Röse's zahnleiste).

According to this view, which we have to consider in connection with the models—there is an uninterrupted layer of epithelium passing all round each jaw as a continuous horizontal sheet.

The papillæ of the teeth do not push themselves at right angles into the deepest portion of this epithelial band, but sideways, so that in the upper jaw they advance from above and behind, downwards and forwards; and in the under jaw from below and behind, upwards and forwards. Thus a free growing margin of the epithelial lamina is found behind the papillæ of the temporary teeth, and can go on growing after the milk teeth have become constricted off from it. From this grown-back portion of the original epithelial lamina the permanent teeth are formed—so that we cannot correctly say that the permanent tooth is formed from any neck of the enamel organ of the temporary tooth.

MODEL I. x 25.

"Mouth of a fœtus of 2.5 cms. long. The opening of the mouth of the embryo is here represented with a part (of the

n) of the lip, and (of) the mucous membrane of the
In both jaws the tooth-band (coloured green in the
uns as a curved band directed backwards.
e under jaw this band already shows an undulating
and partial enlargement. The lip furrow band is
emaining epithelium of the mouth, coloured orange."
öse says; "The first trace of the tooth-band is
imultaneously in both jaws at the embryonic age
10 days. At 48 days the simple band has split into
rate bands, lying rectangularly one to the other; the
running perpendicularly into the jaws is the 'lip-
and,' the other, passing horizontally backwards, is
tooth band."

Model II. x 25.

model exhibits on the same scale a similar view in a
cms. long. The tooth band is now modified. Its
is, at more or less regular intervals, thickened to a
, and in these situations has grown around the con-
issue cone (papilla or pulp) in a bell shape. (Earlier
described this process as a turning up of the papillæ
epithelial band.)
each jaw are seen the germs of the ten milk teeth.
tions of the tooth band lying between them are
beginning to grow out irregularly. The free edge
oth-band shows a wavy margin."

Model III. x 25.

ws the upper jaw of a fœtus of 11½ cms. long (14
d).
he original section model the tooth-band, with the
uring epithelium of the jaw, only was shown, while
odel the gums, lip, lip furrow, and lip-furrow band
odelled from another fœtus of similar age. The
nd does not pass strictly in a horizontal direction
ds, but in a slight curve; backwards and upwards in

the upper jaw—backwards and downwards in the lower, into the mesoderm of the jaw.

"The irregular growth and budding already visible in the previous model are here seen to have increased. The free edge still forms a wavy line. On the summits of the waves are placed the tooth germs in front of, and above the tooth-band, looking like swallows' nests attached to a narrow beam. The pulp cavities of the teeth have deepened, and in the milk molars one sees slight indications of sub-divisions.

"Throughout the whole the tooth germs show a tendency to detach themselves from the tooth band, and this constricting process has proceeded furthest in the region of the incisor teeth.

"Behind the second milk-molar the tooth-band has grown further backward on each side, and ends in a thin epithelial plate.

"The connection of the tooth-band with the epithelium of the jaw is already partially cut off by an absorption process. The line of demarcation is visible on the surface of the epithelium of the jaw as a shallow furrow (tooth furrow). This runs in the model before us still chiefly on the outer side of the wall of the jaw, but in the region of the incisors on the top of the jaw wall."

MODEL IV. x 25.

"This shows the left half of the under jaw of a fœtus of 18 cms. long (17 weeks old).

"Through the growth of the milk teeth, the configuration of the jaw is altered in such a way that the tooth furrow passes partially on the summit, partially on the posterior surface of the wall of the jaw.

"This tooth furrow (which, as mentioned, indicates the demarcation line of the tooth band from the epithelium of the jaw) is in some places fairly deep,in others scarcely indicated, in places even obviously double, according to the more or less disposition of the tooth-band. The tooth-band shows an early stage of absorption in the form of ing perforations.

germs of the milk teeth are attached to the tooth-band neans of the more or less broad connecting bridges, therwise entirely detached. Behind them, the tooth- grown further as free plates, now more or less stand- emselves. The sub-divisions of the pulp cavities in molars are very clear. The end of the tooth-band nilk molar 2) has thickened, and also grown around la of the first permanent molar."

MODEL V. x 40.

rs the two incisor teeth of the right side of the under fœtus of 30 cms. long (24 weeks old), in connection tooth-band, and a portion of the epithelium of the r as it includes the tooth furrow.

nderstand the model exactly, one must grasp the the tooth furrow in this stage is turned to the hinder f the jaw. A larger portion of the central than of the cisor is represented. The teeth are already quite in development,and have permanent tooth substance, tine and enamel (coloured blue and yellow in the

outer epithelium of the enamel organ (white) shows ns in places, through which the enamel pulp (rose appears. The reticulum lying between them is ndingly thickened. The tooth band is perforated like nd shows excrescences and out-growths.

ro distinct places behind and at the side of the milk ms the "band" is not perforated, but on the contrary n a knoblike fashion; and in these places the papillæ rmanent incisors have grown up. (The epithelium pilla is stained dark red in the model.)

papillæ of the permanent teeth lie (like those of the milk teeth) to the side of the tooth-band and in a di towards the milk tooth. They are brought into vi observing the model from below. The germ of a p third dentition repeated in a similar manner is there *priori* quite imaginable."

MODEL VI. x 15.

"This shows the second milk molar (the larger par the first permanent molar (a smaller portion), of the lef jaw of a fœtus in connection with the tooth-band, and tion of the epithelium of the angle of the jaw. The band (which already in the previous stage was perfora a sieve-like manner in the incisor region), shows now time of birth, in its hindermost portion a solid pla which still in places is attached to the epithelium of the

"Behind the angle of the jaw the tooth-band proc a narrowing plate free into the mesoderm of the jaw, a over the first permanent molar, which is embedded de the bone of the angle of the jaw. With the enamel o this first permanent molar the "tooth band" is still a by means of a short but broad connecting bridge.

"The connecting bridge shown between the tooth-ba the second milk molar is perforated in places. The epithelium of the enamel organ of both tooth germs forated in places so that the enamel pulp shows t (on the model) in rose-coloured spots.

"In the stage before us, the germs of the (perm premolars (bicuspids) are not yet visible. There is germ to be perceived of the second permanent molar. diately after birth the end of the tooth-band grows bey first permanent molar, to give origin to the succ molars. The (permanent) premolars (bicuspids) developed towards the end of the first year."

There is an interesting point noticed by Dr. Röse paper above referred to) in connection with the perf ing up of this tooth-band or epithelial lamina and its bsorption. It can be easily seen by these models ants of the epithelial lamina may persist, and give :h irregularities as supernumerary teeth, odontomes, portions becoming degenerated and not absorbed, gin to such abnormal structures as cysts and epith- ls.

MPROVED METHOD OF MAKING AND ATTACHING ARTIFICIAL VELA.*

By DAVID HEADRIDGE, L.D.S., Eng.

method is obtained a simple, and highly satisfactory it of artificial vela to vulcanite dentures; or for the that, the novel part of the appliance can be made l or alloy plate. The velum carefully moulded to , restores the functions of that organ in as perfect as possible, and dispenses by its own elasticity with ssity for a posterior flap. And the attachment lowing for its easy removal by the patient, (the it being of no greater difficulty than the buttoning of stud) nevertheless gives freedom from the lodgment secretions. The method was first suggested to me icle, Mr. T. Headridge, of Leeds, and with necessary ions I have successfully adopted it in the cases that e since under my treatment.

curate plaster impression, preferably with the portions ft palate not too dependent, and extending as far possible, having been obtained, a model is made in depression of the cleft is filled by wax to its lingual borders so as to produce an unbroken surface to the vault, yet in no way effacing the individual properties of the impression. A zinc die is now made and a small piece of plate swaged. This will form ultimately a portion of the denture in contact with the mucous membrane, and on its lingual surface will serve for the attachment of the velum. This plate should extend laterally to within a half-inch or so from the teeth and posteriorly its edge will depend upon that of the vulcanite base. This again will in some degree depend on the condition of the surrounding tissue; if the soft tissue comes well forward as is frequently the case in congenital cases, it will not be wise to carry the hard plate as far back as under ordinary circumstances it would be carried. On the model with this piece of plate *in situ*, the velum is now moulded in wax, of such a thickness as that the elasticity of the rubber will bear its own strain. After having been smoothly finished it is tried in the mouth to see that it will not inpinge against the upper part of the pharynx when the superior constrictor bulges forward in deglutition, and that it will glide freely on the pillars of the fauces. Altering to meet these desiderata it is again carefully trimmed, and it, with the plate, is tacked on by hard wax to the model, whilst another zinc casting is obtained. Removing the plate a hole is punched just within its posterior border in the middle line, and through this hole a wire is passed through the wax model of the velum which has been accurately reapplied. After detaching the velum from the plate, the wire should be left extending about ¼ of an inch on both surfaces of the wax. A two-part plaster mould is now made dividing along the border line of the velum. These are duplicated in type metal, the pin being inserted into the depression in each plaster mould when casting, and left in the sand whilst pouring. The result is that we obtain moulds whereby when vulcanising with the insertion of an iron wire we retain a hole through the velum. These type ɘtal moulds it is needless to say should be most carefully ted and the surfaces well polished, and the artificial vela bber vulcanized as specially directed.

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* Read before the Manchester Odontological Society.

To resume the making of the metal attachment on the cond zinc model. A rim of plate is carefully adapted to e base-plate projecting over the edge of the velum not ore than $\frac{1}{8}$ of an inch. After finishing up, it is soldered, as so are little tags of metal between the two free edges of the ates, or rather slightly within these borders, to hold the vulnite. Into the hole previously punched a pin with a head the height of the thickness of the velum is soldered. The eth being now mounted with the metal attachment *in situ,* e plate is vulcanized. When polished, the artificial velum by its hole slipped over the pin's head, and its edges cked under the projecting rim now continuous with the lcanite, and all is ready for insertion in the patient's outh.

TOOTH PASTE.

Powdered Pumice	℥j.
„ cuttle-fish bone	℥iss.
„ myrrh	℥iij.
„ orris-root	℥iiiss.
„ precipitated chalk	℥vj.
„ alum	℥j.
Curd soap	℥viij.
Glycerine	℥xij.
Rose water	℥x.
Otto of rose	ʒj.
Oil of cloves	ʒij.

Shred the soap, mix it with the glycerine, and heat on a ater-bath till uniform ; then add the water, and [redacted]ith e powders, finally adding the perfume,

British Journal of Dental Science.

LONDON, JUNE 15th, 1893.

A DENTAL DILEMMA.

The short extract from the President's address at the opening of the recent session of the GENERAL MEDICAL COUNCIL which we published, would, perhaps, have led one to expect that of the two dental matters therein mentioned, the first one would have received the most attention. But it seems that we must wait for the Solicitor's report before we hear more, authoritatively, with regard to the "warning." The other reference was to the work of the Education Committee,and this proved to be of much interest and importance. The account of the COUNCIL's proceedings upon dental affairs was, as might be expected, only briefly presented in the medical journals; and we therefore furnish our readers with a shorthand report of the discussion which obviates the necessity of referring in detail to the various points. We have heard from time to time of the efforts made by other American Colleges and their diplomates, to gain a similar recognition.by the GENERAL MEDICAL COUNCIL as Harvard and Michigan have had accorded them in the past; and it was this importunity which proved the exciting cause of the Council's dilemma. The predisposing cause was the singling out of the two Universities from the rest, when the Dentists' Register was instituted. To understand the position fully, it would be necessary to refer to what is now becoming ancient history. However, the evidence given in 1881 before the Royal Commission on the Medical Acts, throws sufficient light upon the question. In answer to questions, Sir JOHN

ES said that whereas our curriculum required four years ndance, the two American colleges required three, but others were perhaps satisfied with only eight months al attendance. The examinations were conducted wholly he teachers and very little was heard of any rejections. John had heard that some institutions had made com- nts that their certificates were not recognized, but mem- of others had expressed great satisfaction with the se taken, for sooner or later it would force their colleges a higher qualification and lead to a better state of dental ation. This prophesy seems now to have been fulfilled ence the dilemma.

ecognising the latest determination of the GENERAL MED- COUNCIL as the only logical outcome of an attempt to with the position, we may, perhaps, be allowed to leave phase and speculate upon other aspects. If it be in any true that the past action of the COUNCIL has been an ortant factor in elevating Dental Education in the ted States, we find here some excuse for the fact that nty-three gentlemen are on the Dentists' Register with- having been subjected to the same test as their English hren. True they are in a class by themselves, on the page, and practically labelled "made in America", as a to anti-free-traders. But in the whirligig of time we ld prefer to find that a continuance of the beneficial action e COUNCIL had resulted in all the necessary conditions be fulfilled, so that our English-speaking fellows may find r names ranged and intermingled with those of their lish *confreres* instead of being relegated to a "Foreign"

f it be worth while for American Dentists to practise in at Britain, we believe that their national independence welcome an invitation to enter our widely open main ance rather than seek the shelter of a back door. Are e views too optimistic? If not, what may we expect? vard and Michigan may still lead the way, demand a rough preliminary examination preferably conducted by independent authority, and institute a curriculum of, at

least, four years, which shall include a thorough trainin
general, as well as special, surgical subjects. Whether
examiners for the diploma will ever be chosen outside
body of professors and teachers, seems doubtful. On
other hand these two Institutions may not see fit to m
such alterations simply to enable some of their countrym
to practise here, and in that case it will always remain o
for any of the others, bold enough to meet the aspirati
of their alumni, to rise to the occasion.

Dental Hospital Concert.—The Students of the L
don Dental Hospital may be congratulated on the succes
their concert held on the 6th inst., at St. James's Hall.
surgical staff and other friends helped to make a g
attendance which, we hope, proved of some service to
Building Fund. The Guildhall Choir opened the proceedin
under the direction of Sir Joseph Barnby, and amongst
artistes who contributed solos, were Mesdames Newling
Frickenhaus, Misses Frida Scott (violin), C. Butt, and
Hoare ; Messrs. Joseph Holman (violoncello) Ben Dav
Watkin Mills, R. Peck and N. Salmon. Mr. Wilhelm G
officiated at the pianoforte, and a strong committee of
students were in evidence.

Artificial Teeth in the Larynx.—*The Glasg*
Medical Journal quotes a case in which the patient
with an accident from a weight falling upon him. A
being unconscious for half an hour it was found that a
of artificial teeth, which he had been wearing, was missi
and it was assumed that he had swallowed them. L
afterwards an examination with the laryngoscope sho
that the foreign body had not passed down the gullet
was impacted in the larynx. It was successfully remove

-tracheotomy seventeen months after the accident.
ld have been glad of further details as to the size
of the plate.

IESTER AND SALFORD SANITARY ASSOCIATION.—
ciation issues a series of tracts for the instruction
blic. No. 1 leaflet provides information as to the
od for infants, and,in conjunction with No 10,"The
he Teeth," should prove of value to many of the
asses. The latter leaflet has been prepared for the
ion by the Staff of the Victoria Dental Hospital, and
mation and advice given cover the most necessary
which attention should be drawn. Whilst the
condensed, the wording is clear. The leaflet can
ned from John Heywood, Deansgate, Manchester,
f-penny each, or for distribution two shillings per

'S AND BADLY DEVELOPED TEETH.—It is not
n to find references made to badly developed teeth
nd associated with rickets, and that both conditions
to the same cause, non-assimilation of lime-salts.
inions are also held, to the effect that the period of
is delayed in ricketty children, rather than that the
mselves are affected. At the Wiesbaden Congress,
stated his opinion that all theories founded on the
on that there is diminished absorption of lime in
nust be rejected. He first found that he could
e quantity of lime excreted by the kidneys, constant
icketty and healthy children by feeding them on a
iet of milk and pap. He afterwards added inor-
ne to the diet, and found that the increase in the
f lime in the urine was the same both in healthy
cketty children.

THE VICTORIA DENTAL HOSPITAL.—We have received a copy of the ninth Annual Report of the Manchester Dental School, from which it appears that although placed at a disadvantage from a forced removal to other premises, much good work has been done. . It is satisfactory to know that the site for a new Building has already been acquired, so that the friends of the Institution after discharging a debt to the Treasurer of some £38, will be able to concentrate their energies upon a Building Fund. The people of Manchester should certainly see to it that the Dental School which is attached to Owens College should have a proper habitation. In the Dental Committee's report one fact is worthy of notice. The hospital is open three evenings a week in addition to the six mornings. That the average evening attendance is nearly three times that of the morning is surely suggestive to the managing authorities of other dental hospitals.

COCA TOOTH-PASTE.

Powdered white soap	℥j.
French chalk	℥iij.
Cuttle-fish bone	℥ss.
Carmine	ʒss.
Tincture of coca-leaves	℥ss.
Oil of peppermint	♏xx.
,, cascarilla	♏v.
,, linaloes	♏xv.
Glycerine	a sufficiency.

Make into a paste.

ASTRINGENT TINCTURE FOR THE TEETH AND GUMS.

Myrrhæ	ʒxij.
Rad. iridis	℥xij.
Benzoini	ʒvj.
Cort. cinchonæ	℥viij.
Ext. krameriæ	℥j.
Capsici	ʒj.
Spt. rectificat.	cong. ij.

Macerate for seven days, and filter; to the filtrate add 30 oz. of simple syrup.

acts of British & Foreign Journals.

PRACTICAL POINTS.

By Dr. Henry Barnes.

tta-Percha is probably used for more purposes than r one material in our possession. A few are here d: As temporary fillings in cavities already prepared, nt of time or other causes prevents the insertion of a nt filling; as temporary fillings in large cavities not , to prevent nerve exposure till such time as patient or may find time to devote to permanent filling; as a tween teeth separated by cotton, rubber or other means inflammation to subside and retain space during the of permanent fillings; as a wedge between teeth, arge spaces from extraction or otherwise, standing the one being filled, to distribute the force of the low, and thus securing to the patient the greatest comfort; as a rest under the arm of the Perry separ- ecure the instrument from rocking, slipping, etc.; rator and rest for the jaws during operations; as force chloro-percha into every portion of the nerve . It may also be used to make small handles for the hus securing a better hold and more perfect manipu- the broach during nerve extraction, especially when oach is from the distal surface; also wound around of a ribbon saw and making a secure handle for this nt,; also for separating teeth; held on the end of an nt, and heated to determine the life or death of the ulp. It is also used as chloro-percha (gutta-percha in chloroform) to fill root canals, making the most illing for this purpose which has yet been brought to e; to repair the break in the rubber-dam; to secure , within cavities, when mixed with cotton. For fill- of the molars when it is impossible to apply the dam f German silver or other metal secured on the inside oro-percha, and then forced over the tooth, will pre- moisture from interfering with the work; it is also lent article to flow over the inside of a cavity when e is nearly exposed and when it is desired to cap with

Amalgam.—To repair a break in a tooth next a gold fi on the lingual surface, also to repair when decay has atta the tooth at the cervix beneath the filling. In the first take a little scrap of amalgam already mixed, and whic crystallized, then heat a spatula quite hot and pres amalgam into place ; as it quickly becomes hard, no da is feared for immediate dislodgment. This is especially ful where it would loosen the gold filling if much cu were done. After thoroughly preparing the cavity, f usual. Generally decay will be retarded for years. Th one of the condemned practices of twenty years ago.

Extracting Nerves.—After arsenic has been in the for three days, remove the capping and drill into the chamber, and after removing the pulp and nerves, or as of them as possible apply oil of cassia on a pledget of c and dismiss the patient for a day, then after dressing peroxide-hydrogen, use oil of cassia and dry out with ver air and immediately fill.

The Use of the Separator in Filling Tee Perhaps the best of any yet introduced is the Perry saves the time of all concerned, and if judiciously used boon to patients. With it there are few cases which ca be separated enough for immediate filling. After the ca are filled a little more space may be gained, so that na contour is preserved, and food is not crowded into th shaped spaces to the great inconvenience of the patient, very likely to re-decay at an early day. This is a nice p Sand paper discs, if coated with soap, instead of sweet o glycerine, will not heat the tooth so quickly as when no is used, and gives a more polished surface to the filling.

The Application of the Rubber Dam.—It shou large enough to well cover the mouth, cheeks and chi that it may be held and kept out of the way during operat Many breaks about the necks of the teeth after the dam been applied is due to punching the holes too near toge They should be punched far enough apart so that the ru will not be stretched in the interdental spaces, and be su punch enough holes. The ligating is easily done by allo the thread to extend from tooth to tooth on the lingual without a single knot. Black carpet thread makes a ligature, and its colour makes it possible to detect any f which may have caught on the cervical border of a ca especially in deep cavities, splitting the thread and using rands for teeth closely wedged.—*Ohio Journal.*

THE ACTION OF NITROUS OXIDE.

By H. C. Wood, M.D. Philadelphia.

or made five experiments, in which pure nitrous first breathed, then after a sufficient lapse of time ide containing three per cent. of oxygen, then de containing five per cent. of oxygen, and then l asphyxia was produced. In each case two or lations of the pure or oxygenated nitrous oxide . The test for the completion of anæsthesia was te abolition of all conjunctival reflexes. As in the reflexes are very persistent, it is probable that loss sness and sensation were reached a little before the ; but the corneal reflex affords the best practical nparative judgment.

ct of the introduction of a little oxygen into the de was very pronounced ; three per cent. of oxygen average time required for the production of anæs-ngthen from two minutes and thirteen seconds to es and seventeen seconds, while the introduction of ent. of oxygen increased the period to eighteen nd fifteen seconds. This effect of oxygen is, of ery strong corroboration of the asphyxia theory.

e completion of the five experiments, he made one e effect of the inhalation of a mixture of nitrous eight per cent. of oxygen. The inhalation was during half an hour, at the end of which time the flexes, although impaired, were still quite active, of gas giving out, my experiment was ended, but it was continued long enough to decide that eight of oxygen will in the dog indefinitely postpone the of complete anæsthesia. That the system is affected was shown by the fact that mechanical stoppage of at the end of the half-hour produced very few complete insensibility occurring in less than a

ults reached in this paper indicate that theoretically le to get a mixture of oxygen and nitrous oxide contain sufficient oxygen to maintain for a length vital function, and yet have so little oxygen that ness would be lost. The zone, however, between anied loss of upper brain function and loss of respir-

atory and heart power is such a narrow one that it does
seem probable that the surgeon can avail himself practic
of the existence of this zone; the danger of passing s
denly from anæsthesia into sensibility, or from partial
complete asphyxia, would always be too imminent. Ano
difficulty would be in the great length of time requirec
produce anæsthesia with a combination of oxygen and nit
oxide. It is not possible by experiments upon the lo
animals to determine accurately the exact percentage of c
gen which the surgeon should mix with his nitrous oxide w
essaying to make use of the zone just above spoken
Experiments seem to show that in the dog six per cen
oxygen in the nitrous oxide is probably the nearest appr
to a practical anæsthetic mixture that can be made. I
probable that in man larger proportion of oxygen c
be used.

The conclusions which seem to be reached by the pr
research are, first, confirmation of the view that nit
oxide produces anæsthesia by cutting off the supply of oxy
second, that a mixture of nitrous oxide with oxygen does
seem to be available as a practical anæsthetic.

The Dental Cosm

PECULIARITIES OF ALLOYS.

It is astonishing what a change in some metals the pres
of a minute quantity of another will produce. Of all t
so affected probably gold shows the greatest physical cha
All dentists are aware that foil from the same manufact
and produced by the same process, will not always be
same. It will exhibit at times very strange characteri
when the attempt is made to work it. Nor is this al
the fault of the maker. If the dentist leaves it where i
be subjected to the action of volatalized substances, its w
ing properties may be materially changed. In the labora
a bit of strange alloy may be introduced into the cru
when melting, that shall make it unrecognizable.

The addition of one per cent. of bismuth would rend

plate unworkable, as it would perhaps crumble in
. Lead acts in the same way. One part of the
etal in two thousand parts of gold reduces its
from eighteen tons per square inch to five tons.
ar of gold can easily be broken with the hammer,
colour is changed to an orange brown.

r is another metal the properties of which are thus
anged. Electrically pure copper is soft, flexible, and
ound. A mere trace of silver makes it, when ham-
rolled, elastic, hard, and sonorous. The presence
nth of one per cent. of bismuth in the copper of a
irely destroys its commercial success, by reducing
ctivity. One one-thousandth of antimony changes
copper cables into the worst conceivable. The
ables of to-day will carry twice as many messages as
a generation ago, through improved processes by
rer copper can be produced.

lso is extremely sensitive to the presence of certain
bstances. By the addition of two-tenths of one per
carbon, steel is produced that will make excellent
or bridges, but which would be entirely unfit for
r weapons. If eight-tenths per cent. of carbon is
ed, the steel will make a capital razor, but it would
useless for rails, or for the construction of bridges.
e trace of magnesium be added to iron it will be
le to make a magnet of it, and it cannot be hardened
ng it in water after being heated to redness.

nered palladium foil will absorb, at the temperature
g water, six hundred and forty times its own volume
ogen gas, but a foil made from the fused metal will
nly sixty-eight times its own volume.

zinc will not be dissolved in pure hydrochloric, or
phuric acid, but if the slightest trace of metallic salt
duced the reaction sets in at once. Dry chlorine will
bine with dry metallic sodium, but a trace of mois-
l start the reaction immediately. Carbon dioxide is
rbed by dry lime. Dry sulphuretted hydrogen does
ish dry silver. Dry iodine does not decompose dry
etted hydrogen. If oxygen be rendered perfectly
nbustion is impossible in the gas. Hence, if there
aqueous vapour constantly in our atmosphere, com-
would probably not take place. These chemical facts
cient to account for many of the strange phenomena
tals sometimes exhibit in the laboratory.

The Dental Practitioner.

Review.

Notes on Anæsthetics in Dental Surgery. By Arthur
Underwood, M.R.C.S.. L.D.S. Eng., and C. Cart
Braine, F.R.C.S. Second Edition. London : Claudi
Ash & Sons, Limited, 1893.

This book is an old friend with, if not a new face, son alteration in body. Professor Underwood has introduce into the second edition of his book an addition in the sha of the opinions and the results of the experience of anæsthetist, one of his colleagues. The chapters on ether a chloroform have been entirely re-written, and the endeavo to make the work really thorough and practical, seems to to have been realized. All the necessary points are dea with in a satisfactory manner, and the literary style leav nothing to be desired from the reader's point of view. Th remarks on stertor, cyanosis, incomplete anæsthesia, a minor precautions in connection with nitrous oxide may well recommended, both to student and practitioner. W quite agree with the opinion with regard to the question pregnancy. "Gas is eliminated so quickly from the blo that it probably has no effect on the child." Even if t nonoxygenation of the mother's blood were still long delayed it would seem that the mother would suffer rath than the fœtus. Tarnier has recently shown that the latt offers considerable resistance to asphyxia, and relates a ca where, by Cæsarian section, he saved a child two hours aft the mother's death.

In the book before us is a chapter on the use of Air wi Nitrous Oxide, by Mr. Rowell. This method, which appea to be somewhat in fashion, may be used with advantage the same class of patients in which Dr. Hewitt found t combination with oxygen of peculiar value, viz.: in anæm girls, weakly persons generally, and children. We recon mend a perusal of this chapter to all interested in the questio By careful watching we have ourselves been able to keep a good nitrous oxide narcosis in several cases of childre operated on for Trachoma by the method known as "Expre sion." It is needless to say that the administrator in su cases must confine his attention strictly to the anæsthesi egulate the admission of air, and the return to "gas" the greatest nicety, in order to get a satisfactory result all four eye-lids are treated.

Notes on Anæsthetics" concludes with a chapter on the iology of Anæsthesia, which will well repay the ghtful reader, and should at least prove attractive to the nt.

Reports of Societies.

NTOLOGICAL SOCIETY OF GREAT BRITAIN.

dinary Monthly Meeting, May 1st, 1893. Mr. R. H. dhouse, M.R.C.S., L.D.S., Vice-President, in the chair.

e Minutes of the previous meeting were read and rmed.

tcliffe, Charles Frederick, L.D.S.I., 15, Victoria Terrace, ı Shields, was nominated for Non-resident Membership.

e following were balloted for and unanimously elected resident Members :-

ırward, P. Stewart, L.D.S. Edin., 127, Mayfield Road, burgh.

aser, James Leslie, L.D.S. Edin., 5, Castle Street, In-ess.

iach, Gordon Reid, L.D.S. Edin., 1, North Guildry et, Elgin.

nith, Arthur Hopewell, L.R.C.P. Lond., M.R.C.S. Eng., S. Eng., Lindum House, Boston, Lincolnshire.

ewart, James, L.D.S. Edin., 19, Princes Street, Perth.

e Librarian reported that in addition to the usual nals and Transactions of Societies, he had received *The nsactions of the American Dental Association*, 1892, 'The Testimony of the Teeth to Man's Place in Nature" . H. Balkwill, presented by the author.

e Curator (Mr. Storer Bennett) said he had the pleasure nounce a very valuable donation to the Museum, from f the corresponding members—Mr. Kölliker, of Zurich.

It consisted of an extremely well-arranged case of instrum comprising amalgam carriers, matrices and matrix hol very thin files and file-carriers, and some new forms of flexible metal powder carriers for polishing contour fill these instruments being used on the burring engine. would be seen, they were cup-shaped and flexible, so they would readily accommodate their shape to the fo the particular filling by a little pressure being exerte them during rotation. Mr. Kölliker claimed for the ma that a plastic filling, having the normal contour of the t could be more readily inserted with these instruments with any others.

Mr. Bennett also presented to the Museum the model of a woman about 23 years of age, a patient a Dental Hospital. It was noticed that she had a small c supernumerary tooth on each side of the mouth in the tion normally occupied by the first molar. On the left the supernumerary tooth was immediately in front c second molar, and on the right side it was directly b the second bicuspid. The teeth were extracted, and cou seen in the model.

Mr. Bennett also stated that while recently on a h in Holland with his brother, they had visited the Zool Gardens at Amsterdam, where they had been much inte in seeing—in the anatomical museum—the lower jaw female deer (*Cervus equinus*) with a large odontome on side in the position of the third molar.

They had also noticed the skull of a female orang-o (*Simia satyrus*), in which the second upper pre-mola the right side had erupted outside the malar portion c zygoma, and above the first permanent molar, but quit an inch external to it. The tooth was directed obli downwards and outwards, the crown only being erupte a completely formed alveolar socket had been formed a the root. The tooth on the left side was normal in pos but not in articulation. The antagonism of the teet remarkably deranged, the upper canines biting o posterior aspects of the first lower pre-molars, inste between their anterior aspects and the lower ca The first and second right upper molars bi three-fourths of the first and second lower m while on the left side the second pre-molar bit wholly o first lower molar; the first upper molar bit only o posterior fourth of the first lower one, and the second upper molar on the posterior third of the second lower molar.

It was very remarkable that the antagonism of such important teeth as the canines should be so modified as to remove the upper ones entirely from contact with the lower, causing them to bite only between the cusps of the lower pre-molars.

These specimens were considered so interesting that an endeavour was made to effect their purchase, but ineffectually. Every facility was, however, afforded for examining the specimens, and permission to take casts readily accorded. A wax model of the right half of the orang's skull was therefore taken, showing the misplaced upper premolar, and the plaster cast obtained from it Mr. Bennett had great pleasure in presenting to the Museum.

The CHAIRMAN announced that Mr. Watson having been unable to be present when his paper on "The Pathological Conditions of the Pulp" was discussed, had sent the following reply, which was read by the Secretary:—

"Mr. Bennett said that he took exception to the remark that the formation of dentine of repair after abrasion and erosion was a sign of the beginning of the end. I meant this to apply more particularly to those nodules in the pulp tissue, by the aggregation and coalescence of which the pulp is gradually destroyed, leaving the tooth in a condition more susceptible to disease. As regards Mr. Mummery's remarks, I may say that I did not stain for micro-organisms: all the preparations were stained with picro- or borax carmine. Mr. H. Smith said that he was rather puzzled about micro-organisms in connection with hypertrophy of the pulp. This pathological condition was caused, probably, not by organisms directly, but by the irritation of their products. Mr. Baldwin asks if it is possible by antiseptic dressing to get a carious cavity and exposed pulp into a thoroughly healthy condition. This all depends on the amount of destruction of the pulp, the length of time which it has been exposed, and the condition of health of the individual. Recent exposures might be treated successfully, and the tissues brought into a healthy and aseptic state, but if the pulp has been exposed for some time it is far better treatment to destroy. Mr. Ashley Barrett asks as to the precise cause of staining of teeth. This I attribute to the blood in acute pulpitis being forced into the tubules and depositing the colouring matter. Mr.

S. Spokes wished to know as to the process of calcificati
the exudates. I suppose he means the formation of calcar
granules from the exudates. All that is wanted fo
formation of such concretions is the presence of albumen
lime salts. As regards the process of calcification, my s
ought to have shown that the process of calcification inv
all the tissues of the pulp, masses forming both round ve
and nerves. The presence of pulp stones indicates tha
pulp is in process of calcification."

The **Chairman** called attention to the Medical Con
which was to be held in Rome this year, and reminde
members that a form of application for membership cou
obtained from the Secretaries by any who wished to at

Mr. J. H. **McCall** presented models showing (1) T
position of Bicuspid; (2) Exaggerated Cingula on U
Incisors; (3) Home-made Specimens of Mechanical De
try.

The first model was that of the upper jaw of a y
lady, aged 21. Both the lateral incisors had been extra
and on the right side the first bicuspid occupied the pla
the missing lateral. The bicuspid was twisted, so tha
mesial side was presented to the lip. Mr. McCall eli
from the patient that the laterals had been extracted
after their eruption to relieve crowding. He considere
result of the treatment very unsatisfactory, as the disfi
ment to the patient was considerable.

The second model was taken from a boy aged 15,
showed upper lateral incisors having well-marked cus
their lingual surfaces.

The third models were taken from the mouth of a mi
aged woman, and showed the patient's ingenuity in prov
herself with artificial substitutes after losing her molars
bicuspids. Her *modus operandi* was first to soften a
strips of brown gutta percha in hot water, kneading
into blocks of a convenient size and shape. Having
four of these blocks, she pressed them rapidly into place,
by closing the jaws while the gutta percha was still soft
obtained a very good "bite." Portions of broken-
teeth and ragged stumps served as retaining posts fo
gutta percha blocks, and the patient could use them fre
mastication without any fear of displacement. The m
presented showed these blocks *in situ*.

r. **Cunningham** referred to a case of "home m
ry in which the material used was not gutta p

ood. It was that of a porter at Chatteris, on the Eastern, who had lost all the upper teeth, and was g a very primitive denture in the lower jaw. On gation, he found that the man was in the habit of g his own lower denture. The front incisors had gone, to the accumulation of tartar, such as might be ed in the case of an old man who had not any particular ic habits with regard to his mouth. He had not the t notion how the man got the idea, but the denture ry much like the bone work that one used to see. His enture was made by whittling out a piece of wood, fitted across between the two incisors, but after wear- it for some time he arrived at a position in which hing more was wanted. In exchange for his wooden e (Mr. Cunningham) made him a denture fit to wear, still received tributes of thanks at intervals from this y porter. The man said he should have lost his on if it had not been for his being able to make this e, because otherwise he would not have been able to nce the name of the station.

Coxon, with reference to the case of which Mr. ngham had spoken, said that he had the veritable e in his possession, but had unfortunately mislaid it, hould have shown it. It was very ingeniously made, ch as where the man had the stump of a bicuspid ng up, he had drilled out the piece so as to leave that entirely free, and at the same time let the denture n the gum. It had to be frequently renewed. In se it was made of larch; all the rest were made of

Robbins mentioned a case which came under his notice ecently, as showing how a patient was sometimes able ir a piece, or to make it presentable. It was that of a who was living a long way from dental help. A had broken away from its backing, and, as she had to a number of calls in the district where she resided, she to remedy the defect; after several unsuccessful ts she got a very good match and a very good result ving a piece of turnip. If it was not the shade she d she had some method of staining it. When he saw e it was neatly tied to the gold backing, and at a little ce it could scarcely be detected from a natural tooth. rse it did not last long, and she had to make a fresh ery day.

Mr. **Ackery** said that cases of this sort were not as ra some might imagine. Some three or four weeks ag St. Bartholomew's Hospital, a patient asked him to rem two lower stumps, not because they pained him, but bec he was going to have some artificial teeth. It was sugge that he should see the gentleman who was going to make teeth before the stumps were removed, but the reply was he was going to make his own. On being asked how he going to set about it, he said he had taken the cast of his mo reproduced it in plaster, and from that he had made a mo in sand, and had made a die of iron. He proposed to silver for the plate, and he asked where he could get artificial teeth. He (Mr. Ackery), took rather an intere the man, and suggested that if he brought the work as fa he had got on with it, he would try and help him in its ther progress. The man had not yet turned up, but t might still be an opportunity of seeing the silver plate an helping him to some method of attaching the teeth.

Mr. **J. Howard Mummery** then read a paper on " Röse's Models of the Development of the Teeth," which publish on page 529.

The **Chairman** said Mr. Mummery's modesty only allo him to call this a casual communication, but looking at valuable matter it contained, and the excellent way in w it had been brought forward, it might be well regarde the paper of the evening.

Mr. **Storer Bennett** referred to the difficulty, in t extremely interesting, though rare cases, in which they a history of no temporary teeth being erupted at all, permanent teeth coming through the jaws at the no period, of understanding—taking the accepted view of development of permanent teeth—how those permanent could have been developed from the necks of tempo teeth if there had been no temporary teeth developed viously. But if they accepted this view, that a com tooth-band gave off first the temporary set and then permanent set, it was quite easy to understand that for reason or another the temporary set could, of course, never been developed and erupted. The germs were alr provided for the permanent teeth, and therefore it was asy to understand that they might get a permanent hout a temporary tooth. Such cases were on record, always been exceedingly difficult to explain and un , but if this view of the development of teeth ct, it helped one to understand the cause. It also threw on the development of the permanent molars from d the temporary, which was always rather difficult to rstand as generally described.

F. J. Bennett on the Resemblance of some Forms of Inflammation in Bone and Teeth.

me interesting cases have been recorded at the Pathoal Society, by Mr. Watson Cheyne and others, of a tion first described by Sir James Paget under the name quiet necrosis," which illustrate on the one hand the rance of dead tissue by the living body, on the other the extent to which large masses of dead tissue can be ved without obvious symptoms of inflammation. It rs in these cases that large sequestra have been found, unded by masses of granulation tissue, occupying the llary cavities of long bones, and this condition is supposed brought about by previous attacks of periostitis, which caused such pressure on the nutrient artery supplying nterior of the bone as to have resulted in the death of that on. Being entirely removed from septic contamination ppuration followed—hence the term "quiet necrosis."

nention these cases because it is admitted they illustrate mere devitalised tissue is subject to absorption, even gh free from septic irritation, and because it has been ned by some dental practitioners that it is only necessary sinfect the root canals of dead teeth, and not to fill them

ne specimen of absorption which I have brought down xhibition this evening shows very well the result of such ment, though I do not pretend that even disinfection has completely performed.

ne tooth from which the section was made had been filled e crown and pulp cavity, but not in the fangs, and the ls of these fangs are seen to be in every part attacked bsorption. The method by which this is brought about tirely similar to that described by Mr. Watson Cheyne ccurring in the interior of long bones, namely, by the lopment of highly vascular granulation tissue, which gs the absorption cells, or osteoclasts, into contact with lead tissue, which they quietly remove.

Mr. Hepburn on a Case of Superior Protrusio

Mr. David Hepburn exhibited models of a case of
inherited superior protrusion, and illustrated the progre
the case in its various stages by a series of ten lantern sl
The case was a very pronounced one in a young lady c
years, an age which Mr. Hepburn considered favourabl
the correction of the deformity in this particular insta
The apparatus employed was shown and explained. It
sisted of a vulcanite plate capping the first molar and se
bicuspid teeth (the first bicuspids having been removed),
an arrangement of gold wire springs acting on each t
individually. This Mr. Hepburn considered a more effe
and more easily managed method than that of employi
continuous band designed to act on all the teeth collecti
He deprecated too forcible or too rapid treatment, maintai
thatmore lasting results were obtainable by the slow met
and that probably less elongation of the teeth would resu

Mr. Hepburn also related a case of spontaneous cur
protrusion.

Mr. Baldwin wished to ask whether the interference
the bite, mentioned by Mr. Hepburn, was usual. In
experience good results had invariably followed when al
back teeth had been capped.

Mr. Mummery, in reference to the last-mentioned ca
spontaneous cure, asked whether, seeing the way in which
lower incisors struck the backs of the upper incisors,
any more molars were lost the teeth would not come for
again.

Mr. F. J. Bennett remarked that the reason why a
cure could not be expected in the first case was that
bite was altogether too forward. The second upper bicu
instead of biting between the first lower molar and the se
bicuspid, bit in between the two bicuspids and so with
molars. He noticed by the models that soon after the
bicuspid had been extracted, the second bicuspid had
forward, and was occupying the space between the first
second bicuspid. The protrusion was really owing to p
sure from the back of the mouth, and was not therefore li
to have cured itself. In the second case shown, the bit
back teeth was normal, or nearly so, and that accou
self cure.

HAIRMAN asked what means Mr. Hepburn propose

to keep the teeth in position, because they would be
to very soon come out again without a retaining plate.
LAWRENCE READ was sorry that Mr. Hepburn had
out with pianoforte wire, because for the inside of the
nothing had ever been used that was so comfortable
ss conducive to raising the bite or displacing it in any
His own experience of stout gold wire showed that it
anged the bite, but he had found by using the steel
and gradually increasing the pressure, he could move
further, with less pain, more effectively and with less
erence with the bite. It required careful adjustment.
ajority of people who used steel springs made them too
and not sufficiently long. A long spring was more
ıal. He was sorry that Mr. Hepburn (whose opinions
reat weight at the Hospital School) should put forward
wire as superior in every respect to steel.

. **BADCOCK** asked if the plate shown was used as a retain-
late ; and if so, whether the capping of the bicuspids
ot account for the mal-occlusion.

e **CHAIRMAN**, having called upon the authors to reply,

. **MUMMERY** said the only remark he would make was to
at he wished to present the models to the Museum.

. **HEPBURN** had very little to add. With regard to Mr.
win's question, he meant that in that particular case the
erence with the bite was inevitable. He could not see
at particular case how the teeth could be moved into
present position without upsetting the bite. The second
was not capped ; the first molar and bicuspids were
d, but if they had been left to themselves and the other
brought in by any means, he thought there would have
interference. It was quite inevitable, Mr. Mummery
aid, that in the second case, if the molars were lost, irreg-
y would reassert itself. He (Mr. Hepburn) was fully
nced it would ; and although the teeth were still retained,
were simply a mass of patchings and stoppings in order
etain them as long as possible, because the moment
ack teeth were lost the incisors would come out again.
regard to the point of a retaining plate, he had used the
exhibited for that purpose as long as he could. The
had been left to themselves for about a fortnight, but
did not show any tendency to come out again. He
Mr. Read was a great admirer of pianoforte wire, and
as he, especially for hospital work, where they could not
lge in gold springs to any extent. In his private prac-

tice, however, he had settled down to the use of gold wi Very often the piano wire seemed to give way; but he ne found that the case with gold wires if properly made adjusted.

A vote of thanks was then accorded to the authors of communications.

MANCHESTER ODONTOLOGICAL SOCIETY.

The Monthly Meeting of the above Society was held Tuesday evening, March 7th, 1893, at the Grand H The President, (Mr. P. Headridge) in the chair.

New Members.

J. Wilson Fort, L.D.S. Eng., of Lancaster Road, elected a member.

Nominations for Membership.

Applications for Membership were read from the fol ing :—William Kelly, L.D.S.I., Manchester ; Albert Mau L.D.S. Ed., Chester ; Thomas Hill Morrey, Ashton-un Lyne.

Casual Communications.

Mr. Williams shewed models in explanation of his met of ensuring a correct bite in edentulous cases.

Mr. David Headridge, L.D.S., Eng., read a paper " An Improved Method of Making and Attaching Artif Vela," which we publish on page 537.

Mr. Frank Harrison gave a demonstration on Immed Root Filling and Amalgam Contour Filling, selecting for demonstrations, a left upper first bicuspid, with a dead p Carefully freeing the pulp chamber from all dead ma (and the cavity of the tooth from all carious dentine) Harrison thoroughly dried the canals with hot air, afterwards saturated them with carbolic acid full strengt

The canals being again dried, the ends were carefully f loselle silk, and the remainder of the canals with Hill's percha. This completed the operation of immediate lling, but the same tooth being extensively decayed, it elected for the subsequent demonstration of contour In such cases Mr. Harrison inserts in the pulp dental alloy or gold post, made from ordinary pin These posts vary in length from ¼ to ¾ of an inch in ,and are in shape of a three-sided evenly tapering wedge ay be used with a rivet head, or with one-half of the led away, or with no head at all, as the necessities of e require. Such a post is inserted into the gutta-percha anal by grasping the thick end with a pair of torsion s, and, after warming the post in the flame of the spirit -pushing it well up the canal. To more certainly this, one heavy blow of the hand mallet may be also Gold or amalgam may now be worked round the post, ntoured to the extent desired.

he case selected for the demonstration, amalgam was or the filling, and a satisfactory result obtained.

Harrison's method was made the more interesting to embers by the illustration by means of the Optical rn of the various processes, and of the instruments and nces used in the operation.

J. E. Sherratt gave a demonstration on the construc- f gold crowns. Selecting a suitable left lower molar in outh of a patient, he prepared the tooth, fitted the and satisfactorily completed the whole operation during urse of the evening.

atient of Mr. David Headridge's was in attendance, ng an artificial velum, made in the manner previously ned.

ase of Diffuse Osteoma of the lower jaw was shown by avid Headridge. We shall publish the description and ks next month.

Masters demonstrated a method of making diamond

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bber bands, tubes, etc., that have lost their elasticity asily snap, may be restored by steeping for half an hour ate water of ammonia (aq. ammonia, 1 part; water, 2) *Items of Interest.*

Dental News.

GENERAL MEDICAL COUNCIL.

An important question in connection with the registr
on the English Register of the dental diplomas o
American Universities of Harvard and Michigan came u
discussion at the General Medical Council, on Monday,
29th, Sir R. Quain, Bart., President, in the chair, in a r
from the Education Committee of that body on ce
communications which had been received from certain d
practitioners, and the Baltimore Dental College.

Originally the communications had been considered b
Executive Committee, but at the November Session o
Council a resolution was passed referring the matter t
Education Committee, with a view to their reporting o
matter to the May Session of the Council.

The following is the memorial sent in by dental p
tioners:—

"Memorial as to the recognition of American I
diplomas in the United Kingdom."

We, the undersigned licentiates of Dental Surgery o
Royal College of Surgeons, desire respectfully to cal
attention of the Medical Council to the following facts :-

After the passing of the Dentists' Act in 1878, an
settlement of the Dental Curriculum of the United Kin
by the General Medical Council, the question of the rec
tion of foreign diplomas for registration was raised. I
then, on examination, found that no foreign dental di
testified so complete and so lengthened an education a
United Kingdom qualification. But it was, we be
considered desirable on the ground of professional amen
recognize, 'for the time being,' the Harvard and Mic
qualification, as those, though falling short, made the ne
approach to our own standard, thus waiving for a
equality of qualification as between United Kingdom
foreign qualifications in favour of the applicant for reg
tion.

"The great advances which have been made from ti
time in our educational standard have rendered the ineq
still more marked.

"The preliminary examination demanded by these Colleges is, as may be seen from their own prospectuses, of such a nature as to fall far below the standard required from the Dental Students of this country; and further, these examinations are in some instances committed to the care of individuals who have no kind of responsibility nor any claim to be considered competent for such an office.

"On these grounds we beg respectfully to suggest that the Medical Council, by virtue of the power invested in it by Clause 10 of the Dentists' Act, withdraw, for the time being, the right of registration which has hitherto been accorded to the American Colleges.

"*To the* General Medical Council."

⁂The following signatures were appended to this Memorial:—

John Tomes.
J. S. Turner.
Morton Smale.
S. J. Hutchinson.
W. B. Paterson.
Ashley Gibbings.
William Hern.
Frederick Canton.
Storer Bennett.

Arthur S. Underwood.
Joseph Walker.
F. Newland Pedley.
Francis Ewbank.
John Ackery.
J. Howard Mummery.
Sidney Spokes.
Charles S. Tomes.

The following remarks on the English and American dental diplomas were added:

"The most obvious difference between the American and English Dental Diplomas may be best observed in studying the methods of examination pursued in each case. Herewith are columns showing the subjects in the preliminary examination required from intending Dental Students in the American Universities recognised by the English Medical Council, and also that required by the Royal College of Surgeons of England.

"It is commonly said in America amongst those Dentists who are interested in Education, that, owing to independent States being able to make their own laws, and owing to the ease with which schools and colleges can be established, the competition is in a downward direction, and that schools which have tried to take a higher standard have suffered by a diminution in the number of their students."

A column showing the relative positions of English bodi to the University of Harvard and of Michigan, in the matt of educational requirements is here appended, after whi the communication continues.

"The Harvard column shows a very meagre amount requirements, and its first condition admits of a very lo standard. The second condition is vague, and may also so low as to suit the condition of almost any applicant.

"The optional subjects are very wide, and include mu of what we consider essential, and for which we have defini specifications. That Latin should be optional in a previo University examination is, to say the least of it, very remar able.

"The Michigan column makes a brave show, but, at best, will not bear comparison with the English one, and the method of announcement in many instances directs t attention of the candidate to the points which he will have meet, and in 'Plane Geometry' (section 2, (c)) there is provision made for riders as there is in the English section

"All the sections seem to tie themselves down to certa elementary hand-books from which questions are to be s and in Latin the books prescribed—one of them deserved popular—will hardly bear comparison with Cæsar and Ovi from which the papers are set in the English examinatio beside the translations set from other authors.

"In England the examination in Arts or the prelimina examination is conducted by independent bodies who have clearly defined standard, which must be attained by t candidate, but who have no indication of their future inte tions.

"In America the certificates of certain schools are receiv —certificates given by these schools to their own scholars- or the candidates are examined at the colleges which a waiting to receive them as pupils (at the Dental School Boston for Harvard, and at Ann Arbor for Michigan), what is more extraordinary, private individuals are empower to examine candidates and to certify to their fitness become students at a University which, in the course of thr years at the most, may confer on them the title of Doct and the right to be registered on the English Dentist Register. For the Michigan University there is such a Examiner appointed, and he is now resident in Londo This gentleman, it may be mentioned, has recently written t f the leading Dental Journals in America that the l Schools here are 'cheap replicas' of those in America. following remarks on the American Dental curriculum ppended :—

he American Curriculum is certainly both extensive articular, and may seem superior to the English one at st glance owing to the amount of detail that is given. details, however, seem to point more to the limitation than to the extension of what is taught; as, for ce, a course of six lectures on Neurology is specified, en it is added: 'The anatomy of the trifacial nerve made the subject of special study.'

he time which is allowed for the multiplicity of subjects ree years; but a case recently before the Medical cil points to the conclusion that there is an amount of city in the computation of years which enables this to dified; for a candidate for registration had accomplished ork in such a way as to receive his degree of Doctor in od of twenty-five months; and, from all one hears, this a solitary instance.

would be a long and more or less fruitless task to se one of these curricula; but if the number of subjects l can be taught in three years, then the American t and the American teacher must each be superior in d and in perceptive power to those in England. To who do not think that this superiority exists, it seems here is great promise of teaching, but very small possi- of education.

lthough want of practical experience precludes a direct arison between the curricula of the two American ersities in question and that of England, there are n side-lights which may lead us to estimate in some e their relative value.

s against the three years American time, the English culum demands four years, and in many instances, where upil resides at a distance from an educational centre, ime virtually amounts to five years. Then there is ifference in the amount of fees charged in the American e and in the English one.

t the Michigan School the Fees are £37 14s., and this des fees for parts for dissection and the Diploma fee, ll such expenses. The fees for parts are estimated at uineas (£2 2s.)

t Harvard the inclusive fees are £87 10s. In this

amount is included all matriculation, Diploma, and dem
strator's fees ; but a deposit of three guineas (£3 3s.)
required to cover laboratory breakages, and also a deposi
one pound five shillings (£1 5s.) for parts for dissecti
the unused balance to be returned. The items to co
dissection show either a very low rate for parts, or a v
small amount of dissections.

“ In England the dissections are defrayed by the stud
as he goes along, and are kept as one of the records of
work in some schools ; beyond this the fees and Diplo
fee amount to £122. The expenses are thus shown to
much heavier here than in America.

“ The Professional examination in England is open
Fellows of the College and to all Teachers, and is conduc
by a body of examiners who are not engaged in teachi
In America the certificates which procure the degree
Doctor are granted by the teaching staff of the school, or
‘ Faculty.’

“ This constitutes a very marked contrast between the
systems.

“ The requirements of the Medical Council from
Dental student are in every way as strict as they are fr
the general student of Medicine ; but the *Dental Regis*
admits Foreign Diplomas from two Universities as qualifi
tions for registration, while no such privilege is awarded
any Foreign Diploma by the *Medical Register*.

“ In the future the Dental Curriculum is not likely to
made less exacting ; indeed, the tendency is in the oppos
direction, and it may now be taken as certain that
preliminary examination will be very much extended, and
this extension the Dental student will have to participate,
that the discrepancy between the American and Engl
dental student will become greater than ever ; and while t
obviously unfair condition exists it will be impossible
those interested in Dental education to make that advan
which they so much desire.”

The communication which had been received from
Baltimore College of Dental Surgery was as follows :—

Baltimore, June 1, 1892

“ Dear Sir,—The Faculty of the Baltimore College
Dental Surgery most respectfully make application to ha
this school recognized by the Medical Council of Engla

laced on the same footing with the Dental Departments rvard and Michigan Universities in the United States nerica.

n making this application we would state that this ge is the oldest Dental Institution in the world, and ne Dental Profession dates its origin from the founding School, the Charter of which was granted by the and Legislature in 1839.

Vithout making invidious comparisons, we claim to be eer and equal of any Dental School in the world—that ve always maintained a foremost position in advancing terests and welfare of the profession as an educational ition—that our curriculum and instructions are fully to the demands of the times—that we probably number our *alumni* more distinguished scientific men than other school—and that our standing at home is stioned. In consideration of these facts we think it lly fair to discriminate against us; and, whether judged r work already done, or by the work we are now we think we are fully entitled to your consideration cognition. Our diplomas in this country, are recog- wherever the degrees of Harvard and Michigan are.

Ve mail you our catalogue, which contains a list of all raduates, and will be pleased to give any further infor- n, should it be desired.

"Very respectfully, your obedient servant,

R. B. WINDER, *Dean*.

J. C. MILLER, Esq., B.A.,

Registrar of the General Medical Council."

er carefully considering all these matters, the Committee, ch Dr. Leishman was chairman, issued the following , and now presented it to the Council for confirmation. reference to the Report by the Executive Committee alifications for registration under the Dentists'Act (1878) tes, Vol. XVI, pp. 148-198), it will be found that "the utive] Committee were of opinion that the Certificates of egree of Doctor of Dental Medicine granted by Harvard rsity, and of the Degree of Doctor of Dental Surgery ed by the University of Michigan, may be recognised Council, under clause 10 of the Dentists' Act." The ds for this recommendation are as follows:—" In each

of these institutions the Candidate for the Degree is requ
to have devoted three years to professional study, and to
attended lectures and courses of instruction at a DentalCol
during two years. The Examinations, which are written
practical, including actual operations and the preparatio
specimens of mechanical dentistry, appear to furnish suffic
guarantees of the possession of the requisite knowledge
skill for the efficient practice of Dentistry or Dental Surge
At this period no Preliminary Examination was demande
Harvard.

The common requirements of the four British and
Licensing Bodies at that time (1879) were, as stated by
Executive Committee :—“ In each instance the Candidat
required to be twenty-one years of age, to have passed or
the preliminary Examinations recognized by the Mec
Council in the case of Medical Students, to have been enga
four years in the acquirement of professional knowledge
have been engaged three years in the acquirement of prac
knowledge under a registered practitioner, and to pro
evidence as to moral character.” Beyond these conditi
attendance on courses of Anatomy, Physiology, Surg
Medicine, Chemistry, and Materia Medica was obligato
the length of time for the study of each subject varyin
the requirements of the different Bodies.

Communications have on various occasions been rece
from American Universities and Colleges, begging that
Licences in Dental Surgery should be recognised by
Council (Minutes, Vol, XVI, p.438 ; Vol. XXVIII, pp.
216). These communications showed that the requirem
of the petitioners had been raised to the standard of the
American Colleges recognised by the Council. In every
however, the petition was refused, on the ground that
liminary Examinations were not enjoined, and that the co
of professional instruction extended over three years onl

There is reason to believe that certain of the Amer
Bodies have brought themselves up to the standard of Mi
gan and Harvard, and that their teaching appliances
satisfactory. From personal observation the Committee
been assured of the excellence of the teaching arrangem
in such centres as Baltimore and Philadelphia. It app
therefore, to the Committee that injustice is done to
American Bodies whose curriculum is, to say the least, e

to those of Harvard and Michigan, by the grant of special recognition to the two last-named Colleges alone.

It appears, however, to the Committee that a greater injustice is done to the Licentiates of the British Bodies by placing them on the same level as the Diplomates of the two recognised American Colleges whose curricula are manifestly inferior to those enjoined in this country. The Council can assure itself of the character of the teaching and examination of the home Licensing Bodies; and being possessed by Sec. 22 of the Dentists' Act of full power of visitation and inspection, can exercise discipline in order to maintain or raise the standard. The Council has no such power over Foreign Colleges. So far as the interests of the public are concerned, the question involved is not at present of great importance; for on reference to the "Table showing the Numbers and Qualifications, with percentage of the Total, of Persons registered in the Dentists' Register for 1892," it will be found that the names of only 19 Foreign Dentists appear (7 from Harvard and 12 from Michigan), forming 0·38 per cent. of all the registered Dental Practitioners. (Dentists' Register, 1892, Table on p. 23.)

The Committee, for these reasons, recommend that the following Qualifications be removed from the Table of Registrable Qualifications in the Dentists' Register. names of persons already registered under these Qualifications being retained:—

Doctor of Dental Medicine of the University of Harvard.

Doctor of Dental Surgery of the University of Michigan.

Dr. **Tuke** moved the adoption of the recommendation of the Committee at the end of their report, that the dental diplomas of Harvard and Michigan Universities be removed from the table of registrable qualifications in England. He said that the report had already been in the hands of members of the Council for some weeks past, and there had only been a few verbal alterations now made in it. The facts of the matter might be mentioned in a very few words. After the passing of the Dentists' Act, the Executive Committee for reasons which doubtless were thought sufficient at the time, allowed the diplomas of the Harvard and Michigan Universities to be registered, notwithstanding that, for the American qualifications the curriculum was only three years as against four for the English. Besides that the English bodies required attendances on courses of Anatomy, Physiology, Surgery, and Medicine, the length of such studies varying with the requirements of each body, whilst the American bodies only asked nominally for a course of an unspecified nature. Since that time things had considerably levelled up, and many other Colleges and Universities had brought their curriculum up to the level of those demanded by Harvard and Michigan, and had petitioned the Council that their qualifications should be admitted to the Dentists' register. That had always been refused on the ground that no preliminary examination was exacted, and that the course of professional study was only for three years. With those facts before them, the Committee found themselves on the horns of a dilemma. They must either do an injustice to the Colleges, who had levelled up to the standard of Harvard and Michigan, or they must recommend that those Americans whose qualifications now stood on the Register should be removed. In doing the former they would be doing a great injustice to the Dentists of Great Britain, inasmuch as they would be admitting to the Register, qualifications manifestly inferior to those of England. On the other hand they thought they would be doing very slight harm to Harvard and Michigan Colleges, inasmuch as on reference to the Dental Register it was found that there were only nineteen men who had been registered for that qualification. Besides that there were other reasons which led the Committee to come to the conclusion they had. There was no question of reciprocity in the matter with reference to the Dentists in America; if any member of that Council were to attempt to practise his profession in New York he would be liable to the action of the law, and that was also true of a large number of other States. He begged therefore, to move that the following qualifications be removed from the Table of Registrable qualifications in the Dentists' Register, names of persons already registered under these qualifications being retained:—Doctor of Dental Medicine in the University of Harvard; Doctor of Dental Surgery in the University of Michigan.

Dr. **MacAlister** seconded the resolution. They must either shut the door against these two qualifications, or they must open it to an indefinite number of American and foreign Colleges. The reasons for differentiating between them were becoming fewer and fewer, and they might easily have their list of foreign and American qualifying colleges longer than that of the whole British Empire put together.

Sir William Turner asked whether it was to be understood that it was the recommendation of the Committee, that the Council under no circumstances should avail itself of the powers conferred on it in the Dentists' Act, to admit to the Register the holders of qualifications obtained in the United States. He thought the Council should fully understand what it was the Committee were asking them to do. It was not to affect the names of any one of those gentlemen on the last page of the Dentists' Register, yet it was to take the position, that in the future, no other holder of an American dental degree, or licence, or diploma, or whatever they might call it, under the existing regulations of the various Universities in the United States, should have his name put on to the Dentists' Register.

Dr. Tuke said that that was certainly the position that they took up.

Sir William Turner said that as that was the case, it was rather a large order for the Council to pass at so late a stage of their Session. He thought it would be as well if they gave a little more consideration to the matter, and that the report should be deferred until the next meeting of the Council.

Dr. **Tuke** thought Sir William Turner ought to have grasped the facts contained in the Report, as he had had it in his hands for the last three months.

Sir William Turner said that he as an individual might have had it in his hands, and other individual members might have had it, but the Council in a body had not had it. They had no opportunity of considering the report and discussing it, and it was too important a matter to be passed by *sub silentia*. There ought to be a full consideration of all the details. Parliament had given them power under the Dentists' Act to admit to the Dentists' Register of this country, those who held foreign qualifications. The Council had exercised that power, and now they were asked at half-past five on the last day of the meeting to do away with that.

The **President**. Oh, no, no. Those Colleges would be put on to-morrow if their requirements are sufficient. They are not to be admitted any longer, because their requirements for professional education are not what we require. It is perfectly open for anybody if they show us that their qualifications are such as we require to ask and to be put on the Register.

Sir J. Simon said that at any rate with reference to

Harvard they should wish to treat that University with courtesy. Perhaps it might be well to communicat that body before they struck them off the Register, b they might since any information had been received raised the standard of their requirements. He did no they ought to accept diplomas that were below ou standard, whether they came from America or any else.

Dr. Tuke thought that to communicate with the U sities concerned, would be only to delay the whole They knew very well what all their requirements were

Dr. MacAlister said that there was absolutely no tion of striking out, or ceasing to exercise their powers the Dentists' Act. The fact of the matter was, that the Dentists' Act was coming into operation, duri transition period, they allowed to be put on to the R two American bodies whose requirements were not q to what the Council desired to see. Since that the refused all other bodies who had applied for regist some of which might be equal, or superior, to these tw

Sir William Turner. Does Dr. MacAlister re that these two were put on on the representations Dentists of this country?

Dr. MacAlister said that it was a temporary re There was then some need for a temporary provision, b need had now passed away, and now the time had co them to say whether the qualifications of these bodies be allowed to be registered until they came up to the requirements.

The President said the Council had had more th example of most disgraceful conduct with reference registration of these qualifications. The American U sity gave one man a certificate on the ground that he naturalised American citizen, and it was the merest that the matter was discovered. This man went America, stayed there two years, and then represente self as a naturalised American citizen. The Counc taken that for granted, but there was some little su about the matter, and further inquiries were made. then found that to be a nationalised American citi must have resided for five years in one of the State this man had actually satisfied the Harvard people was an American citizen. There were many other repared to follow his example, to get an imperfect ed in two years, and then come back on the strength of being an American citizen, and ask for registration on the Dentists' Register. It was his opinion that at any rate the registration of these qualifications should be suspended for the present.

Sir William Turner pointed out that in the resolution before the Council, that the removal of the qualifications of Harvard and Michigan was not expressed as a temporary, but as an absolute removal.

Mr. Brudenell Carter said that they had no power of suspension; it must be removal. They had all had the report, and the evidence which it contained, in their hands for many weeks, and he thought they must be most familiar with the applications that came to them from so-called American dentists, who came over from Baltimore, or some other University, and said that they ought to be registered because their curriculum was as good as that of Harvard or Michigan. He thought they could not act too promptly in endeavouring to protect their own dentists against the invasion of half-educated, and frequently somewhat shady people.

Dr. Heron Watson said he thought it was most unfortunate that so important a subject should come up at so late a period of their meeting. He trusted that by some means they could postpone the consideration of it for another period of six months, that meanwhile the registration of these qualifications should be suspended.

The **President**: They can come in any number to us, and the only way they could stop it was by directing the Registrar not to register any more persons with these qualifications until instructions to the contrary are received from the Council. It will be a matter of serious danger and inconvenience if these American dentists are allowed to come and register as they have been doing.

Sir William Turner asked how many had come in the the last few years.

The **President** said that it was every day getting worse, and the applications were becoming more frequent.

Sir John Simon said that the only point was as to the insufficiency of these diplomas. If Section 10 of the Dentists' Act were carefully read, he thought it would be seen that their purpose would be answered by simply suspending the registration of these diplomas. Let them send the report to these Universities, and meanwhile suspend the registration of these diplomas. I would move that we suspend to time being, our recognition of these diplomas.

THE PRESIDENT. Then you would move that the rep sent to them, and that meanwhile the recognition c diplomas of these Colleges be suspended.

SIR JOHN SIMON: Yes.

SIR WILLIAM TURNER suggested that the recommenc of the Committee be left out of the Report.

The PRESIDENT said that the English bodies were en in favour of suspending these diplomas. Would Dr. and Dr. MacAlister substitute the resolution as suggest Sir John Simon, for the original resolution?

DR. TUKE: Yes.

The resolution was then put and carried in the follo form:

"(*a*) That the recognition of the certificates of the de of Doctor of Dental Medicine of the University of Ha and Doctor of Dental Surgery of the University of Mich be suspended until further notice, and that the Registr instructed to refuse the registration of such certificates."

"(*b*) That a copy of the Report (without the last graph) be forwarded to the authorities of the I concerned."

The matter then dropped.

It was subsequently moved by Mr. Wheelhouse, sec by Dr. MacAlister, and agreed to, "That the Dental mittee appointed under Clause 15 of the Dentists' Act, for the purpose of erasure from, and restoration t Dentists' Register, consist of the following members President (*ex officio*), Sir Dyce Duckworth, Sir W Turner, Sir Phillip Smyly, and Mr. Wheelhouse."

Correspondence.

[The Editor does not hold himself responsible for the opinions ex by his correspondents.]

To the Editor of the "British Journal of Dental Scienc

WORLD'S COLUMBIAN DENTAL CONGRESS.

Sir,—In consequence of the decisions of the Odontological Soc Great Britain, and the British Dental Association declining t delegates to the World's Columbian Dental Congress, several o appointed as Honorary Officers for Great Britain, have felt obl decline acceptance. Such action is in no way intended to interfere with the attendance of individual practitioners from this country to the general and cordial invitation of our American Confrères.

The Dental Congress is organised by a joint Committee appointed by the American Dental Association, and the Southern Dental Association, with the help and co-operation of the various State and Local Dental Societies, and will be held August 14th to 19th inclusive in the Art Building on the Lake front in Chicago, where suitable accommodation has been provided by the World's Congress Auxiliary of the Columbian Exposition, recognized and supported by the United States Government for the purpose of establishing a series of Congresses of the best workers in General Science Philosophy, Literature, Art, Agriculture, Trade and Labour. The membership will be confined to legally qualified reputable dentists, (as defined in the code of Ethics of American and Southern Dental Associations) residing in the United States, and such other Scientific persons as may be invited by the Committee on Invitation.

All dentists residing in foreign countries should make application to the Honorary President or the Vice-President of their respective countries who are empowered to decide upon their eligibility. When the applications are satisfactory to a majority of them the name so agreed upon shall be transmitted by July 15th, to the Committee on Registration who will issue a membership card without any further reference, and without the admission fee of ten dollars, which will be collected only from residents of the United States.

The dentists of Chicago have rented the entire house at 300 Michigan Avenue, not far from the Art Building, and opened it as the Columbian Dental Club, for the entertainment of dentists visiting Chicago during the continuance of the Exposition, and as head quarters for the Dental Congress. Dentists from this country properly accredited, will be received as visitors, and may have their letters addressed to the care of the Club.

Although our leading dental organisations will not be officially represented at the Congress, the Executive Committee have requested me to assure a very hearty welcome to all reputable dental practitioners who conform to the formalities necessary for the adequate protection of hosts and guests; and no doubt Mr. Balkwill and Mr. Pearsall, who are Honorary Vice-Presidents, will be glad to transmit the names not only of members but of all dentists eligible for membership of the Odontological Society of Great Britain, or the British Dental Association who desire to attend the Congress.

I am, yours faithfully,
GEO. CUNNINGHAM.

To the Editor of the British Journal of Dental Science.

3, Princes Square, Plymouth,
May, 28th, 1893.

DEAR SIR,—Will you kindly give the enclosed, which is a copy of a letter I have received, a place in your Journal. The letter explains itself, and I shall be very happy to do anything I can to forward t views of any English dentist, who may be thinking of attending t Congress, and demonstrating in any way.

Yours truly,
F. H. BALKWILL.

(COPY.)

Philadelphia, Pa., May 1st, 1893

F. H. BALKWILL, L.D.S.

MY DEAR SIR,—As a member of Committee No. 15, (Prosthe Dentistry) of the World's Columbian Dental Congress, you will appreci the importance of our making as good a representation as possible.

The work assigned us is that of arranging for clinical demonstratio of any new or important methods of practice in our department. T Committee has been made up of representative men in different sectio of this country and England, in order that our field of labour might widened as much as possible.

To perform our duty with credit to the Congress and ourselves, w require the active co-operation of each member of the Committee.

As a first step toward this end, your chairman would offer the follo ing suggestions as to the character of the clinics.

1. All demonstrations should be essentially new in character, and n be repetitions of clinics previously given at other Society meetings.

2. Demonstrations should be given, as far as possible, by regu practitioners of dentistry, who have something of practical and scienti interest to present.

3. No demonstrations should be allowed, the apparent or princi object of which is the sale of materials or appliances.

Will you be kind enough to state your opinion in regard to any or of these suggestions, and to offer any others that may occur to you, w a view to improving the character of the demonstrations.

It has been decided that Crown and Bridge work, as well as Ortl dontia are to be included in our branch. For all of these demonstratio we will want the best man we can obtain—those of originality as w as skill—and your chairman would be pleased to have you suggest t names of any such as you think would be able and willing to serve in the capacity of clinicians.

After the suggested names have all been received, a list of them w be made out and sent you for approval or disapproval.

The hours, from 9 to 12 of each of four days (Tuesday, Wednesda Thursday and Friday,) will be devoted to clinics, those in Operative a Prosthetic Dentistry being carried forward at the same time in separa rooms.

Ample accommodations in the way of room will be provided for fr six to twelve demonstrations in our department each day.

As our time is short please give this matter your immediate and earn consideration, and let me hear from you at the earliest possible momen

Very truly yours,
S. H. GUILFORD, Chairman

tish Journal of Dental Science.

1. LONDON, JULY 1, 1893. Vol. XXXVI.

A DENTAL RETROSPECT.*

By William Headridge, L.D.S.I.

interesting, as well as important, to keep well before ntal vision the varied past, and the present progress of fession, remembering that the past with all its errors rded us the sure foothold which now enables us to with assured certitude, the investigations which ically and distinctly indicate the true scientific status ern dentistry. We may now smile at some of the and methods of procedure of even some of the most tful practitioners of, say, thirty years ago, yet the of defined success of which we are now the gatherers, evolution of much patient investigation, many tening failures, and many premature conclusions. hemists of old searched in vain for an elixir of life, pher's stone, or method of transmuting metals, and to us now as mere Quixotic dreamers, yet they have as a legacy some of the most important discoveries in ry and materia medica.

peculiar dual character of dentistry as a science, ing, as it does, surgical and mechanical manipu- presents opportunities for the application of the

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* Read before the Manchester Odontological Society.

highest mental capacity and special aptitude. The d
to excel in dental mechanics fostered by our predecesso
preference to the operative or preservative branch, is
strange, when we consider that tuition and ample practi
the laboratory, or as some prefer to style it, the workr
could be easily had ; whereas it was almost impossibl
acquire special training in surgery as applied to denti
Not until the way was paved for the granting of a d
diploma, did the importance of a high-class dental sur
training become apparent. And thus now, whilst
take just pride in the marked degree of excellence atta
in the construction of dentures and other appliances for
mouth, we feel that improvement in our status as a profe
will depend in the future, largely on our more inti
minute, and special acquaintance with oral surgery. We
can boast of a literature of a well-defined character, emb
ing researches learned, scientific, and authoritative, al
periodical literature containing the latest methods of d
procedure.

I feel that I am addressing gentlemen intimately con
sant with dental science and practice, and in briefly glan
at some of the phases of change that mechanical dentistr
the first instance had undergone during the experienc
some of the older practitioners amongst us, I am actu
by the desire to compare the past with the present,
we may thereby be induced the more keenly to appreciate
progress made. It is frequently said of the old masters,
the beauty and brilliance of tone of their colours, and
general excellence of their work in these particulars
largely attributable to the fact that they ground, and pra
cally made, their own pigments. It does not require m
reflection to realize the common sense of this theory. N
although we have survivals of what we may term

deference and respect, members of the old school who melt their own metal, make their own plate, wire springs, bolts and swivels, also teeth, and indeed every essential for the construction of a denture from beginning to end; the march of progress is largely changing all this, and the terms, dental warehousemen, or dental dealers, are thoroughly established in dental nomenclature. In some respects, we are undoubtedly the gainers by the abundance and facility of supply, as greater excellence often results from subdivision of labour. Yet it cannot be disputed that the stamp of the individuality of the operator is in no small degree sacrificed in the ultimate result, whether it be a denture in plate, vulcanite, continuous gum, or any other appliance that leaves the laboratory as a finished art product. But we go further, and almost question whether dental æsthetics have not suffered by delegating the making of the most important part of a denture, the teeth themselves, to the manufacturers of dental goods. We know it is as impossible to find two sets of natural teeth alike, as it is to find two faces alike; and our aim being a correct representation or imitation of nature, how can we expect to attain idealistic results with teeth made by the thousand from a given range of moulds, which by the way, speaking generally, the practitioner has had no hand in fashioning. Some of the earlier efforts of the dental mechanic in Keramic work may now seem to us crude, yet they often exhibit touches of nature that we now but rarely see reached, and scarcely ever excelled by depôt-made goods. Bone work is dead and buried, and hippopotami or elephants need no longer dread hunters sent forth by dental demand; yet we cannot forget the beautiful specimens of dental sculpture, the exquisitely carved teeth, and faultlessly reproduced palatal conformation, which, when this system was at its best, were the pride of the profession. Bone work did not fade away by slow degrees;

it succumbed rapidly, it was pushed aside unceremonio out of the field by its great rival *vulcanite.*

The old-fashioned bench familiar to those whose experi dates back some three or four decades, was perhaps not most suitable that might have been devised, and would b no means adapted to the present style of work. Bone- required a comparatively low bench to enable the work to get heavy purchase in the process of roughing ou blocks, and not unfrequently the same bench had to serv plate-work as well; with the untidy skin and rack for The structure was usually a fixture fastened to the before a window, and the inevitable accumulation of yea dust and dirt forming about such fittings did not tend to highest sanitary condition. The disadvantages of a bench suggest themselves at once, and without much re tion to the practical operator; and in its place we now in modern-fitted laboratories a well, and in many insta artistically constructed bench of pedestal form, so arra as to be easily taken to pieces when the laboratory, like parts of the house, is being subjected to the peri cleaning. The economy is false that suggests the shu along with makeshift tools and fittings, and it shou unnecessary to hint that the garret or cellar are not su places for the dental laboratory.

What a complete change, we might say revolution been brought about by the application of hardened rubb dental purposes! And like the application of many useful products, what disputings and cavillings on the pa rival claimants for priority of discovery. I have had extracts translated from a *brochure* written in 1867 b Thomas W. Evans, the well-known American practition Paris, wherein that gentleman by affidavit made at the A ican Embassy in that city seems to conclusively substa his claim to be the original inventor of the process of ha ing rubber as early as the year 1848. In a letter to the dental association of Massachusets he exposes the fallacy of both Goodyear's, and Cumming's claims. All this is now more or less ancient history, but at the time it was pregnant with much importance to our American confrères, as they were fighting tooth and nail for their rights, against the usurpers of the patent which Dr. Evans generously gave to the profession at large. We all know the value of hardened rubber in dental mechanical manipulation, and although at one time its seemingly promising competitor celluloid, bid fair to take its place, yet rubber holds its own, and is likely to continue to do so, unless the characteristics of celluloid compounds suggested for dental purposes are materially improved.

Now gentlemen let us briefly glance at a few of the salient features of progress in the operative or surgical branch of our profession. To be skilled in dental mechanics is no mean qualification, but much more is expected of us, and I think we may fairly consider we have responded and are responding to the demand. We have come to consider that the supplying of dental substitutes shall be a last resort, and that the full force of our energy and skill shall rather be in the direction of preserving teeth. It may be said of operative dentistry, that given an examination of the instruments and appliances used, a fair and reasonable estimate may be formed of the class of work done.

To the operators of to-day, who will endeavour to realize the many disadvantages those of the old school had to contend with, the work they accomplished will give rise to more or less surprise. The operating chair which has now developed into a cunningly devised and complicated piece of machinery, had its counterpart in a more or less modified and converted easy chair. It had in some instances movements, but they were so indifferently adapted to the requirements of the operator, that they rather hampered than assisted him. I have one now in my possession, a purchase from the estate of the gentleman I was articled to, which in its day would be considered about the best that could be had for love or money. I of course now look upon it as a dental antiquarian relic, yet I venture to say some of the finest gold plugging was done in it. I have also the companion dental cabinet, a heavy piece of furniture, with spittoon combined, which stood in front of the patient, and not in the now orthodox position at the right hand side of the operator. The forceps in use were what we would now consider crudely finished and decidedly limited in range of patterns; such a thing as a plethora of choice of say a dozen differently shaped instruments for one particular tooth, wasnot dreamt of, and yet teeth were deftly extracted. Compensating influences were forced more to the front, impelling the operator to exercise greater deliberation and caution. The diagnosing and treating of cases generally, was in a measure groping in the dark; if success did follow, the operator was satisfied, but in many instances he would be puzzled to explain the why and the wherefore.

Listerian antiseptic surgery was not known, the researches of microscopists had not as now almost invaded the confines of *ultima thule*; our American friends had not given us the coffer-dam and dental engine, and taught us how to use nitrous oxide; we had not the elaborate display of instruments that any one may now have for the purchasing. Need we wonder, gentlemen, that with these aids, and the highly scientific professional training within the reach of all who can afford, and who care to adopt dentistry as a profession, that the elaborate and masterly achievements of skill within our experience as professional men should be of daily occurrence. In our sanguine efforts to acquire all the knowledge and experience we can, we must exhibit caution, we must guard against the acceptance unless under the mos searching examination and investigation of some of the novel theories propounded by our transatlantic brethren. That grain taken from the tombs of the Pharaohs will germinate and bear fruit, is not yet an accomplished fact and the revitalization of periosteal tissue, in implanted old dry teeth, savours of chimerical theorising. Plate work, speculate as we may, seems destined to hold its own for a long time to come; it has gone through strange mutations, a necessary and inevitable sequence in progressive art; yet many of the details of the old style survive; the highly finished plate without the suspicion of a scratch, deftly strengthened where found necessary, and the soldering neatly and solidly done bands fitted with minutest accuracy, and freely cut away from those parts of teeth where not absolutely required for support.

Then there is that old but invaluable system of tubes, traversing the lingual surface of canines fitted with hickory pegs enabling the operator to fix his dentures firmly without the aid of bands. One must not forget the triumph of skill achieved in the fitting of suction dentures, when the modelling of the mouth direct with plaster was a thing unknown, and when wax was the only material, discovery had so far suggested.

We wonder now, how with the best wax impression, such perfect co-aptation could be attained; yet by dint of careful alloying, a beautiful springy gold plate, circumspectly swaged and finished faultlessly, and complete with fourteen tube or flat teeth, was an every-day accomplishment. Time was not stinted on such a piece of work, it was masterly and elaborately executed, regardless of cost. The old style of heavy gold complete dentures with mathematically adjusted springs,and admirably subserving the purposes of substitutes in those days, is now gradually becoming more scarce, and is superseded by a lighter and more practical class of work.

By the way, on this controversial question of springs, let us

say a word or two. The use or non-use of springs, afte
concerns the patient far more than it does the practitio
and the much vaunted notion that springs in all cases ca
dispensed with is somewhat fallacious. They can be dispe
with in the large majority of cases, where the patient exhi
the ordinary modicum of common sense and aptitude,
there are cases where the use of springs seems to be inevit
either as a temporary assistance or a permanent arrangem
The ingeniously devised discs and vacuum chambers ge
over the difficulty in many cases, but these are not wit
their disadvantages, as strangulated mucous memb
following their use in many instances conclusively proves
is desirable to avoid being hoisted on one's own petard
thus it is well to display caution and discretion in expres
opinions on this important issue of springs *versus* suction

With the changes in the style of work, has follow
marked transformation in the fittings of the laboratory,
especially in the tools used ; some of the old apparati
been swept aside altogether as useless, and others have
so modified and improved as to be scarcely recognis
Indeed, it would be but just and candid criticism to say
the greater number of the tools ordinarily found in laborato
were constructed more by rule of thumb than true mecha
principles. One remembers the straight spindle lathe h
stock mounted on a big block of wood, with a driving w
out of all proportion in weight and size to the power requi
Trueness and steadiness of mandril did not seem to be
sidered necessary ; here and there one came acros
practitioner a little more gifted than his confrères who
special pride in possessing good tools, and having the capa
to design what he wanted, invariably succeeded in posses
a good lathe. For the sand moulding bench a wooden tro
was considered sufficient for all the requirements, and
where moulding of the most accurate description was a

qua non. This crude arrangement is now replaced in practically furnished laboratories with a cast-iron moulding bench, and the moulding of undercuts, and other peculiarities by coreing or otherwise, is supposed to be as well understood by the carefully trained dental mechanic, as the founder of delicate bronzes. The draw bench has been relegated to the lumber room, as sound drawn wire can be got cheaper than the assistant can make it, and for small pieces required in an emergency, a draw plate and pair of good hand drawing tongs, and the help of the vice, there need be no difficulty in producing a good workable piece of wire. The neat compact and powerfully geared flatting mills that are now easily obtainable at the depôts, are an unmistakable improvement, and where appreciable quantities of metal are melted on the premises can scarcely be dispensed with.

In the smaller tools the dentist has borrowed in the past from handicraftsmen all round, as for instance, in the cases the file, cutting pliers, shears, and indeed all tools of a similar character.

As dental mechanical manipulation has become more defined in its character, many patterns and styles of tools appropriated from other handicrafts have become altered and improved in shape, and are now recognised as distinctly dental tools. The old train-oil soldering lamp, we can easily conceive to have been a facsimile in principle to that used by ancient Roman or Egyptian jewellers. The neatly-shaped mouth or self-acting blow pipe, and ample gas supply now enables us to get through our work with ease and comfort.

Here it may be observed that the profession owes a large debt of gratitude to Mr. Fletcher, of Warrington, for the many admirable practically designed laboratory gas appliances, which have obtained for him a world wide reputation; it is pleasing to be able to claim him as one of our fraternity, although he is no longer engaged in practice of dentistry.

The regulating of teeth, and treatment of more ser oral deformities has marched apace with general dental gression; in the former the inclined plane, silk ligatures, g springs stretching over numbers of teeth have given wa more scientific methods. Miniature screw jacks, pull-ba and press-forwards, and other strangely named applia largely of American origin, enable the operator to treat c with dispatch and success; some specialists not alone con with moving teeth, venture on the more heroic unde ing of expanding the entire maxilla. In the books we l most elaborate descriptions of such cases. If we refer l to the best known appliance for cleft palate described by Richardson in his work on Mechanical Dentistry, publishe 1860, we can realize at a glance when we compare M W. Stearn's cleverly devised apparatus that patients benefited to a far greater extent with our efforts in particular speciality than in those times. We r remember that Stearn's apparatus was a masterp compared with the older one with a sponge plug wh by the way, only a practitioner here and there see to have the capacity to construct. We have all followed efforts of the later writers, and we see how simply and ef ively such oral deformities can be dealt with. Mr. Ki ley is evidently not afraid of heroic treatment in his speci of prosthetic dentistry, as witness his efforts described in book to lift a sunken nose for a young woman, an opera that deserved better success in the sequel.

We may in closing, notice one of the most important ev in the history of our profession. That was the Act to am the law relating to dental practitioners. The excitement acrimony resulting from this piece of legislation may be considered to have subsided; our efforts to secure a well defined professional status have been fraught with success, yet all that was aimed at was not attained. It has not muzzled the advertising dentists, it has not made every dentist an L.D.S., it has not, if the truth must be told, elevated very much higher the standard of dental ethics. Yet we are irresistibly impelled to believe that the sanguine wishes of those who first inaugurated the movement, and hung on to it tenaciously until success finally crowned their efforts, will eventually be realized.

To think and act for the mere present is to be selfish, and limited in the range of our sympathy, and as well wishers of the best interests of our profession, we rather incline to look prophetically into the far future, and imaginatively conjure up the time, when every gentleman engaged in the profession of dentistry will possess qualifications second to none of those so proudly cherished by members of other branches of the healing art.

We must not forget the debt of gratitude we owe to those valiant and energetic members of the profession who worked late and early, and at much pecuniary sacrifice, to bring about the consummation we devoutly wished. And we may fairly take some little pride to ourselves as Manchester practitioners for the help that we were able to give our London friends. We now choose to feel that whatever little feeling of jealousy or acerbity that may have arisen with our medical friends during the passing of the Dental Act is for ever buried.

THE New Laboratories and Dental School Buildings of Guy's Hospital will be opened by Sir John Lubbock, Bart., M.P., F.R.S., on Monday, July 17th, at 1.30 p.m.

TAKING IMPRESSIONS OF THE MOUTH.*

By **Frank Hampton Goffe**, L.D.S. Eng. & Edin.
Demonstrator of Mechanical Dentistry at Mason Colleg
Assistant Surgeon Birmingham Dental Hospital.

Before taking the impression of the mouth a careful exa
ination should be made, to decide whether it is advisable
extract any of the remaining teeth, bearing in mind that up
plates are as a rule easier to get firm and comfortable th
lower ones. Therefore, it is not of such great importance
preserve teeth in the upper jaw, and if you have a misplac
or crooked tooth; or one with the alveolus considera
absorbed, it is good practice to extract. If a tooth stands
the front of the mouth that would in any way interfere w
making an artistic set of teeth I should certainly remove
In a paper like this I cannot make any difference betwe
extraction and excision, so the terms would simply mean
same.

Very often there is a discoloured central or lateral, gen
ally with the alveolus considerably absorbed leaving a c
stricted neck ; these teeth are as a rule very ugly and qu
useless for clasps, and when the new teeth are made, there
a large triangular space at the root giving the work a m
artificial appearance, so in cases like this I think you simpli
your work considerably by judicious extraction.

Always, if possible, preserve the canine roots, and if pr
ticable, the crowns, to keep as far as you are able the natu
contour of the face. The complaint is sometimes made t
very often canines are difficult teeth to clasp because of
posterior bulb or production, as it were, towards the bicusp
so you get an ugly space at the neck between the natural a
artificial teeth. As a rule, I remove this "bulb" with a c
undrum or diamond disk, getting the sides fairly parall

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* Read before the Students at Queen's Faculty of Medicine, Mason's Coll

then one gets a perfect hold for a "bishop's mitre" or "dog's ear" band if it is wished, and I have never seen a case where the grinding has done any material damage to the natural tooth.

With the lower plate, of course, it is very different, and here you must save all the teeth you possibly can; as a rule they require considerable trimming before you could hope to get a good articulation. This must be accomplished with files, corundrum wheels, etc. until you get the remaining teeth fairly even. All tartar should be removed before taking the impression, and while doing this be sure and watch your patient to catch the expression, to see if they show the gums or necks of teeth where you thought of putting clasps, as it is imperative that these sometimes necessary evils should not show.

It is a very prevalent practice for the older dentists to compare the present mechanical work very unfavourably with that done years ago. Without disparaging the work of former times, I maintain that artificial work never reached such perfection as now, and mechanical work has to combat against the fact that numbers of dentists look down on prosthetic dentistry and regard filling a tooth as a much more professional occupation. But a large portion of patients can only be treated by supplying dentures, and it behoves us to meet this demand with artistic, useful, and comfortable work. Of course you should not overlook one of the most important points: that is, you must not altogether please yourself. The patient very often comes with preconceived ideas about teeth; they have to pay for them, and also to wear them, and you hope to please not only the patient but also their friends.

You can easily see that no matter how mechanically perfect your work may be it will be altogether useless without you first get a satisfactory impression, therefore I want you to understand the different methods and not to pin faith to any one material. It is very curious what a dive of opinion exists as to which is the best material for im sions. I certainly think that there is no one substance t the best for all, but you must vary your composition to the case, and I will endeavour to point out to you the a tages of the different kinds.

Perhaps I might say here that after the plaster mod obtained, it should be compared minutely with the m Notice where the soft places occur ; these usually are on side of the median ridge on the palate, and this shoul scraped away according to your judgment. Also scrap model by the soft palate where the plate will terminate i a suction case. Observe the height from the ridge alveolus to its junction with the cheek, so that you may j the amount of vulcanite on the buccal side. On the jaw take particular care to see the depth from the alv ridge to the submaxillary gland as this is where plates usually give trouble.

Gutta Percha is the concrete juice of the Isonandra and is of a light brown or chocolate colour. This is run moulds for commerce. I very often use the pink g percha made by the S. S. White Co., for taking models I think it will increase in popularity when its good p are better understood ; it is very pliable and elastic, being a bad conductor of heat, it is one of the most ple materials we have in use.

It requires practically boiling water to soften it, a worked into the requisite shape, and placed in the tray you chill in cold water. I always warm the surface o gutta percha over the spirit lamp so as to get the impre very sharp. If there are any very deep undercuts, must not let the gutta percha get very hard, as if you do may have considerable difficulty in removing it. It mu borne in mind that this composition contracts more in cooling than the other materials. I only use gutta percha in regulation cases, or where there are a good many natural teeth remaining, but do not use it in complete cases, or when the mouth is soft as it requires considerable force to take the impression with it.

Modelling Composition.—In taking models with composition it is well to have a good selection of trays, and you will then find it quite unnecessary to have one specially made. Take care and have the tray larger than the margin of the alveolus, so as to get a fairly good thickness of composition. One of the greatest difficulties you encounter is that a tolerably large jaw is associated with a small mouth. If you have taken many impressions with Godiva or Stent's compositions you find that it seems impossible to get it perfectly rigid hence you are very apt to get a certain amount of displacement in getting it out of the mouth. This can, of course, to a certain extent be obviated by removing the model obliquely, but I have found it one of the greatest troubles with these compositions. If I have a mouth with these characteristics, I use A 1 composition, as it is far superior in these respects, getting perfectly hard and rigid in a very short time.

Where any of the remaining teeth present fairly parallel walls, it is very easy to take the impression very well in composition, or if there are only slight undercuts, these can be trimmed on the plaster model. But if there are any very well pronounced wedged-shaped intervals, you cannot take a good model with it, as the drag that is caused is not confined to the one tooth, but spoils the model for some distance around it.

Some dentists maintain that composition is useless for edentulous uppers, and that these cases must be taken in plaster, because of the displacement of the soft parts. This I maintain is entirely erroneous, for I think complete uppers are amongst the easiest pieces to get perfectly comforta and firm, and you will barely ever experience even slightest difficulty with them. Occasionally after biting th home, the outside goes a little too high, and has to be ease

What I think makes it so suitable for edentulous upper that it presses up the soft parts of the palate in taking model; so when the artificial plate is forced up, it fits eas on the mouth, and does not ride on the hard parts, as it very apt to do when fitted on a plaster model. The object is made that the soft parts are not pushed up evenly, and y cannot judge how much it has been displaced in taking model. This may be right, but my experience is that all trouble you encounter with artificial teeth is confined to lower jaw, so for the lower jaw I have made my own tra and you can easily see the difference between these, a those usually made, as mine are deeper on the posterior p of the lingual side of the jaw. If you examine the mou you can see that it is generally possible to get a f depth in that position, helping to keep the work stea I think this avoids what shallow dentures very often cau namely, cutting into the top of gums. Be careful in judgi the depth. You can manage without coming on the glan as if you get the plate too deep the patient suffers gr pain and inconvenience, and your artificial work is apt to discarded, never to be worn again.

These trays are made commonly by the different compan for complete lowers, but I have not yet seen any for part cases.

Plaster of Paris.—I should state that I consider plas the most useful in lower cases, and especially edentul lowers, as if the soft parts are pressed out of shape at all the force of applying composition, you have the great difficulty to get the plate comfortable. Another source discomfort with partial lower plates, is clasping the natu tooth too tightly, as this pulls the plate against the lingual side of the jaw, and causes a painful cutting in the mucous membrane.

Probably one of the easiest cases to take in plaster, is an edentulous lower. For these cases an ordinary lower tray should be used, with wires through it to hold the plaster. When the model is thrown off, these can be pulled out with pliers and the tray removed. Another very easy model to take is one that occurs very often, viz., in the lower jaw when you have the incisors and canines remaining, or even the eight front teeth. Where the six lower front teeth alone remain, they present a difficulty for artificial teeth, as the lower canine is generally very bad for clasping, and I should certainly advise all young men not to endeavour to hold such pieces in without any clasps, as I think it will be doomed to failure. Very commonly wires are put round these teeth, and as the canines are cone-shaped, the clasp is very apt to work up the teeth, so you see them forced under the edge of the gum. If you can, the best plan is to get a separation between the lateral and canine, and so clasp the tooth from side to side.

It is urged that Plaster of Paris is very disagreeable for the patient, but I think it is very rare for people to object to your advice, and in this I think dentists are very fortunate. I cannot call to mind one patient who has dictated to me what impression material I should use. They put themselves entirely in your hands, and for this reason I think we should consider them as much as possible.

A great number of experiments have been made as to the expansion and warping of plaster. It must suffice for me to tell you that it has been found best to have the plaster of medium consistency, and poured immediately. Using three or four ounces of potash alum to the gallon of water, is found to give the best results. I always put a little ver milion in the plaster for impressions: this makes it convenient for throwing off the model, which is, of c of white plaster.

Plaster is certainly the best for lower plates, and al uppers where there are wedge-shaped spaces, being care remove the plaster as soon as it sets, so that it will fr easily in the undercuts. If it gets very hard it is extremely difficult to remove, and sometimes plaster be fixed to the mucous membrane of the mouth, and takes siderable force to remove it. This must be done with care, as I have seen fair sized portions of membrane from the mouth with it.

To cast a model from the plaster impression, the usu is to cover the mould with a varnish, so that it may be separated from the model. Gum sandarac, or gum are the ones mostly used. A plan which I have found answer perfectly, is to brush the surface of the in sion over with a thin mixture of linseed oil and vaseline the readiest method, and I have never seen any difficu separating the model from the impression. When the has become quite hard, the impression is chipped of great care, so as to avoid injuring the model.

In laying down rules for taking impressions, it will in your mind that some very successful practitioners use one preparation. Thus you will see cases where it man and not the material, and of course dexterous man tion is the most important factor of all.

A CASE OF DIFFUSE OSTEOMA OF THE LOWER JAW.

By David Headridge, L.D.S. Eng.

(The patient, whose interesting case is described below, was in attendance at a Meeting of the Manchester Odontological Society.)

This is a case of considerable interest, not only in its diagnosis, but also from its comparative rarity. The patient, a youth 19 years of age, first noticed slight symmetrical thickening of his lower jaw, about six years ago. These gradually, yet painlessly, increased in size ; he then obtained medical treatment, and was advised to have his teeth examined. This was done about two years after the growth had commenced. The growths were then very evident, and seeming to be confined to each half of the jaw, were liable to being mistaken for dentigerous cysts. However, his teeth seemed in fairly good condition, and though the first molar on the right side, and the second premolar on the left were absent, there was evident probability of these having been extracted. The wisdom teeth had not erupted. Some time after this the second molars showing signs of decay, he had them extracted, although considering their immunity when previously examined, (and he says he had no pain with them,) the decay could not have extended very far. For the last eighteen months, or after four-and-a-half years of growth, he has not noticed any enlargement.

On examining him now, one is at once struck by the massive proportions of the lower part of his face, the chin being some four inches in breadth, and there is also a marked increase of depth. On opening the mouth, the extent of those lateral swellings is more clearly seen, and they may roughly be said to extend from the angles to the canines, and laterally an inch or more affected externally to the arch of the teeth, which, however, is slightly compressed laterally; in addition another new formation is observed behind the symphysis, about the size of a walnut. The surfaces are smooth, and the mucous membrane over these growths is quite healthy, and not at all abnormally adherent. There are no local signs of inflammation. On palpating, dense masses are felt in these positions which do not yield to pressure; on percussion, a distinctly bony resonance is obtained.

The teeth are stunted, and of typical syphilitic character; the four incisors and canines, together with the first premolars, andon the right side second premolar, on the left first molar are present, the others having been extracted. The wisdom teeth not yet erupted. The only history of any possible cause was the contact of his face with the spokes of a carriage wheel, when he was about eleven years old; running after a cab, he fell, got caught in the wheel, and was carried in its revolutions some distance. Previous health had been very good, never had any other symptoms supporting the specific character of his teeth. Family history good; no analogous occurrences

The patient has been kindly examined for me by an eminent Manchester surgeon, Mr. Thorburn, and he gives it as his opinion that the case is one of diffuse osteoma.

No operative interference is suggested, unless the condition endangers life, and then it would necessitate the removal of the jaw.

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LONDON, JULY 1st, 1893.

A CURRICULUM LEAKAGE.

It is somewhat curious that just about the time when the General Medical Council feels called upon to deal with the registration of foreign diplomas, it should appear as if, within our own national citadel, one of our gateways shows a weak spot. For it must be remembered that one of the grounds for suspending the recognition of the Harvard and Michigan diplomas, was the inadequacy of the curricula when compared with our own. It seems that the Royal College of Surgeons in Ireland thought proper to make the three years' course of training in dental mechanics "advisory," instead of compulsory. We believe that certain of the examiners (Messrs. HAZLETON, CORBETT, and MURRAY) protested against the innovation. They met the Educational Committee of the College Executive, and, we suppose as an outcome of their representations, the Committee passed a resolution advising the restoration of the three years' certificate in mechanical dentistry to the curriculum. Unfortunately, as we think, the report of the Committee was rejected by the Council in regard to the recommendation for the certificate; and the examiners entered a further protest by resigning their appointments. So far as our information goes, this represents what has happened, but it will be noticed that our tale is somewhat incomplete. It does not give any indication as to the reason which led to the change being made, and in the absence of any definite knowledge, it is, perhaps, unjustifiable to offer an explanation. One suggestion, certainly, has reached us, but of such a character that it will scarcely bear repetition.

No doubt the examiners who resigned were actuated by the best motives, and could not, conscientiously, hold their positions under the new circumstances ; but we cannot help wishing that there had been a way found for them to have retained their seats, and if necessary, by an increased stringency of examination, to have ensured a nullification of bad results as far as possible. Doubtless the whole question of curricula is open to argument, and in the fight of the Student for the possession of the Diploma, perhaps the main thing for him to know is the extent of the examination. Whether he is to be forced to acquire his necessary information by being educated in a certain time or place depends upon broader questions ; and whilst the personal equation element of the indispensable examiner remains a factor, higher authorities may prefer that the Licensing Bodies shall demand a recognised course of preliminary study, completed on well-defined lines. It may even be regarded as a matter of justice towards the candidate, to insist upon his proving his fitness to enter for the final test of his knowledge, and from an examiner's point of view there is something to be said in favour of his not being trifled with, by audacious and untrammelled ignorance.

There is, we believe, a strong feeling about this new departure, which is shared by others than the late examiners, and we can quite understand that certain friends of the College are anxious to amend matters. This Licensing Body is credited with a large number of dental licentiates, most of whom we imagine will feel interested that nothing should occur which might lower the value of the diploma in the eyes of the Profession. We believe that representations have already been laid before, and considered by, the General Medical Council, but the results arising therefrom have not been considered salutary by those who consider that the old curriculum should be maintained.

THE DENTISTS' ACT AND EXAMINATIONS.—With reference to the remarks which appear above it may interest our readers to recall the Clauses of the Act bearing upon amount of control which the General Council can exercise over licensing bodies, in respect of their examinations. Clauses 22, 23, 24, and 25 read as follows :—Every medical authority shall from time to time, when required by the General Council, furnish such Council with such information as such Council may require as to the course of study and examination to be gone through in order to obtain such certificates as are in this Act mentioned, and generally as to the requisites for obtaining such certificates; and any member or members of the General Council, or any person or persons deputed for this purpose by such Council, or by any branch council, may attend and be present at any such examinations. Where it appears to the General Council that the course of study and examinations to be gone through in order to obtain such certificate as in this Act mentioned from any of the said colleges or bodies are not such as to secure the possession by persons obtaining such certificate of the requisite knowledge and skill for the efficient practice of dentistry or dental surgery, the General Council may represent the same to Her Majesty's Privy Council. The Privy Council, on any representation made as aforesaid, may, if they see fit, order that a certificate granted by any such college or body after such time as may be mentioned in the order shall not confer any right to be registered under this Act. Any such order may be revoked by the Privy Council on its being made to appear to them, by further representation from the General Council or otherwise, that such college or body has made effectual provision, to the satisfaction of the General Council for the improvement of such course of study or examination. After the time mentioned in this behalf in any such order in Council, no person shall be entitled to be registered under this Act in respect of a certificate granted by the college or body to which such order relates after the time therein mentioned, and the revocation of any such order shall not entitle any person to be registered in respect of a certificate granted before such revocation.

THE BRITISH INSTITUTE OF PUBLIC HEALTH.—The Annual Congress is to be held at Edinburgh at the end of this month under the auspices of the Lord Provost and Magistrates of the City. The Lord Mayors of London and Dublin will attend in state, so that the promotion of Sanitary Science and the preservation of the public health will receive a national recognition. The Congress will be arranged in three Sections, (a) Preventive Medicine, (b) Engineering and Building Construction, (c) Chemistry and Climatology. The advantages which such a Congress affords for the diffusion of information and the free interchange of opinion on some of the chief Public Health Questions may possibly induce some members of the Dental Profession to bring forward in the first section the importance of personal hygiene as it affects the teeth, or perhaps some one may point out the need for preventive dentistry by systematic examinations and early treatment of School Children.

OLD DIPLOMAS.—*Truth* understands that there is a market always open for the diplomas of deceased medicos. The fortunate, but unqualified, purchaser calls at Somerset House and changes the name of the deceased man (who of course is presumed to be the applicant, all alive oh!) to that of his own. Still representing himself as the doctor, (presumably alive, but really dead), the unregistered schemer proceeds to the office of the General Medical Council, and, if necessary, shows the Somerset House papers. He is then able finally to get rid of the late doctor's name, having his own substituted upon the Register, and he, himself, becomes in the eye of the law a fully-qualified medical practitioner. It is a pretty tale, and no doubt the trick has been done. But there is a considerable element of risk, and the only case we remember reading about was one which was found out, with unpleasant results to the bold purchaser. It is of course important that the real owner shall die in some part of the world where deaths are not registered.

Dental Students' Concert.—We are glad to learn that the Concert recently given at St. James's Hall has resulted in the addition of £175 to the Building Fund of the Dental Hospital of London. We believe the artistes kindly gave their services, and the favourable balance, after the payment of all necessary charges, must be credited to some extent to the goodwill of the performers. It is well known that many of this season's concerts have been financial failures, which is not a matter of surprise when one hears that, recently, no less than ninety concerts were given in London in one week.

The Eyes and the Teeth.—In spite of scepticism on the part of some medical men, dentists are inclined to believe that eye trouble is not unfrequently dependent upon, and not merely associated with, some tooth lesion. A case published by Dr. Sous, of Bordeaux, would seem to afford additional evidence on this point, although, of course, it might be argued that a neurotic element would explain the symptoms. A young girl of twenty, noticed her right eye failing for three weeks. There was no sign externally of any inflammatory condition, but ophthalmoscopic examination showed choroiditis, without any definite cause. The patient, however, had had a right upper molar recently stopped. It was painful, and upon pressure pain was felt in the right eye. She refused to have the tooth extracted but the filling was removed with the result that the eye symptoms disappeared. When the tooth was again stopped pain in the eye returned in two days, and the treatment was repeated with the same result. This state of things would appear to point to the fact that mere coincidence, did not account for the ocular symptoms.

Weariness.—Professor Michael Foster, in the Rede Lecture at Cambridge, considered the conditions which accounted for weariness. Both in muscles and nerve centres there is a too rapid expenditure, and also a clog of the machinery with the products of activity. Tim necessary to renew the income, and to get rid of the accu lation of products. Practice, habit, and general condit have also to be taken into account. The alternative effec a damp muggy day, or bright clear weather, the depres influence of a cigar, or the heightening effect of a glas beer, might be measured in foot-pounds. When n muscles and many nerve elements are involved, the sev effects accumulate and weariness become "distress." internal life of the body is a struggle for existence betw the several members. The brain of civilized man become ready to outrun its more humble help-meets, the period of most effective work between the moment w all the complex machinery is in working order, and tha which weariness begins to tell, is all too short.

Death Certification.—Dr. Ogle, the Chief of the Statistical Department of the Registrar-General's o has been giving evidence before a Select Committee of House of Commons. In addition to several instances, m or less serious, where the true cause of death was not n known, the witness referred to the verdicts returned coroners' juries. One was an expression of a quite pathological idea! "Died from stone in the kidney, w stone he swallowed while lying on a gravel path in a of drunkenness." In the case of a child three months the jury returned the following instructive verdict, "F dead, but no evidence to show whether born alive." Chairman of the Commission asked whether these occurred in Ireland, but Dr. Ogle acquitted that us maligned scape-goat.

Malignant Disease of the Tonsil.—In discus e cases, Mr. T. F. Chavasse, of Birmingham, expres decided opinion that if the diseased structures are to be freely removed an external incision is imperative. The cervical glands which are early affected cannot be removed by an operati on through the mouth. The following were the steps taken in a successful case:—An incision was made, from the lobule of the left ear, running obliquely downwards to the cornu of the hyoid bone. The various cervical tissues were divided and a lymphatic gland the size of a small nut was shelled out of the anterior triangle. The posterior belly of the digastric and the stylo-hyoid muscles were next drawn downwards and a second enlarged gland, lying against the sheath of the main vessels, was removed. The facial artery was ligatured in two places and cut through. The stylo-glossus and stylo-pharyngeus muscles were divided and the internal jugular vein, being fully exposed, was drawn outwards and protected by a retractor. The pharynx was readily recognised by its bulging during respiration. From the left angle of the mouth dividing the cheek a second incision was made to meet the termination of the first one opposite the great cornu of the hyoid bone. A V-shaped flap was thus formed which permitted the diseased tonsil to be readily manipulated between the two fore-fingers and it was thus removed entire through an opening in the pharyngeal wall, together with the faucial pillars, by means of a pair of scissors. The amount of hæmorrhage throughout the operation was small. The wound was closed with silkworm gut sutures, except where the two incisions met, and here a rubber drainage tube was inserted into the pharynx. The patient was fed entirely by peptonized enemata for two days, and then some beef essence was given by the mouth. On the 19th the drainage tube was left out, and the enemata were stopped.

Abstracts of British & Foreign Journa

SENSITIVE DENTINE.

By W. G. Beers, L.D.S. Montreal.

What do we mean when we speak of sensitive dent
If you examine dentine, you will discover that, str
speaking, we do not mean what we say. Microscopicall
observe that it is a structureless matrix impregnated
lime salts, and that if the enamel and cementum were ent
removed, the tooth would still retain its form and chara
Any pretence that the matrix *per se* is living protoplasn
that it can in any way display vital phenomena, is a h
thesis incapable of proof. When now we examine the t
microscopically, we see that from the pulp cavity to
periphery, the entire dentine is perforated with numbe
small tubes or canals, having distinct walls ; each tube s
ing by an open circular mouth upon the surface of the
cavity, radiating in an undulating course, giving off n
branches which freely anastomose or communicate with
other, something like the arteries and veins of the body ;
which do not reach the periphery of the dentine, as each t
becomes smaller and breaks up into branches at a little
tance beneath the surface of the dentine. Sometimes, a
anomaly, these tubes pass into the enamel and cemen
Each tube has a definite wall or lining that may be der
strated, even in fossil teeth. The tubes are not mere l
canals or ducts in the matrix, like pipes put through cl
but each tube is lined with a definite and delicate, and
indestructible structure, the "dentinal sheath of Neuma
You may boil dentine in caustic alkali ; you may reduce i
concentrated hydrochloric acid ; you may submit it to pu
faction, and though you destroy the cartilage, and leave
slimy and shapeless mass, the sheaths of Neumann rer
intact. But neither of these structures explain the so-ca
sensitiveness of dentine. The tubes were once suppose
be solid fibres ; afterwards it was thought that they were
conveyers of a nutrient fluid; but Tomes proved that they
occupied by little soft fibrillæ, which, like nerve-filam

conduct sensory impressions to the pulp. The fibrils are processes, or prolongations of the odontoblasts, which are situated upon the periphery of the pulp, lining the pulp chamber. No true nerves, or nerve fibrils have ever been demonstrated in dentine; but fine nerve filaments are found close to the odontoblasts, and, as Black shows, they communicate to the sensorium the sensation made on the protoplasm of the odontoblasts through the injury to the fibrils. It is not even necessary to assume that fibrils are nerves, before recognizing that they can communicate sensation. Many animals, which have no demonstrable nervous system, are endowed with sensation. As Black shows, protoplasm in itself may be sensitive, as is seen in the amœba, the leucocyte, etc., which respond to stimulants and exhibit sensitiveness to thermal changes. However, there is no doubt but that the sensitiveness is due to the presence of the tube contents, whether nerve fibres enter or not. We are still ignorant of a great deal as to the peripheral distribution of the nervous system, and it would be rash to say that we know all about the nerve structure of the tooth. Only recently a new addition was made to our knowledge of muscular tissue, and it is quite certain, that if any of us live ten years longer, we will know a great deal we do not know now as to the structure, mode of action and functions of the more complex nervous system.

Sensitiveness of dentine is purely physiological, but we can not assert that it is never pathological. It seems reasonable to believe that a pathological condition of the fibrils at once follows fracture of dentine, or a severe blow, which the pulp resents but cannot resist. Yet it is a demonstrable fact that the teeth differ as to this susceptibility the same as nerve, muscular and other soft tissues: that not only is there a great variation in different mouths, but that the more inexplicable fact presents itself, that in the same mouth at the same time, in teeth apparently under the same conditions as to the extent of caries, there are frequently remarkable differences in degree during excavation. This is quite different, and more obscure, than the fact that the greatest sensibility is at the point of ultimate distribution of the dentinal tubes and their contents—that is, immediately below the enamel. This latter fact would alone prove that the fibrils are organs of sensation and subject to the same laws as nerves of sensation, the highest sensibility of which is confined to their terminal branches. But we cannot explain why there is sensitiveness in one cavity in the same mouth more than in another c in the tooth beside it.

Dentine *per se* is no more sensitive than enamel. W not mean what we say when we speak of sensitive den then, why do we not say what we mean? There is no condition or possibility as sensitive lime salts. It ma thought that this is splitting hairs in argument to disapp of terms which custom so long has sanctioned; but cu has no mortgage on fact. It may be said we call the ep mis "sensitive," but it is only the nerve filaments that r it sensitive. Paralysis destroys the sensation of touch palsied hand will respond to stimuli by reflex action wit sensation. When the nerve filaments are palsied, the *per se* is as dead to sensitiveness as if it were parchm Everyone knows that when the pulp dies, the dentine its so-called sensitiveness, and that with living pulps often no more sensitive in excavation than the ena Dentine would not be sensitive if the branch of the n leading to the tooth was severed. Yet in these several ditions there would be no alteration in the chemical or mi scopical character of dentine. We know very well that sensitiveness is due to the contents of the tubuli, which tr mit sensation to the pulp. Dentine is nothing but the pas matrix, in which lie the sources of sensation. Therefore, cally as well as scientifically, the term sensitive dentine misnomer, and we should say "sensitive fibrillæ." Perh we should not.

Dominion Dental Journa

PENTAL ANÆSTHESIA.

By PROF. L. HOLLAENDER.

ALTHOUGH I require in most cases from five to six c.c yet very often only three c.cm. are necessary. In s quantities as the above, the patient will open the mouth w requested, but when larger quantities are used will keep mouth firmly closed. Nevertheless, this has not compel me to use a mouth-wedge, since on waiting a short time mouth opened of itself. I have, in one administration, been able to extract as many as six to eight teeth and as many roots. Lately I have not administered larger doses than above mentioned, and never induced anæsthesia which lasted more than three to four minutes, although at the surgical clinic in Halle operations were performed under the influence of pental which required half an hour. In all my cases I did not observe any stopping of the heart's action or respiration, and never any chest pressure, which is very often noticed after the use of nitrous oxide.

Notwithstanding, I must admit that in the last two or three hundred cases I was very particular in the choice of my patients,—*i.e.*, seldom anæsthetized very anæmic persons with weak heart action, and in the case of very excited people used pental in small doses with the admission of considerable air, or desisted in case the excitement of the patient did not lessen. For the most part, in a third of my cases, I had perhaps to deal with an incomplete anæsthesia, in so much that consciousness remained while the will-power disappeared. Herein pental differs greatly from chloroform, since according to most authors disagreeable after-effects are the result of an incomplete chloroform-narcosis, while with pental this is never the case.

Regarding the administering of pental, I am always obliged to reflect that narcosis with the common Esmarch's mask, with or without a cloth covering to prevent evaporation of material in the vicinity, are never so successful as with the Junker apparatus. The manipulation demands a certain practice. Above all, the opening for admission of air must be very wide, and care must be taken that the rubber tube does not bend, otherwise the entrance of the vapours is prevented. The bulb must not be pressed too often or too strongly ; the slower the pental enters the lungs, the more satisfactory the effect. Anæsthesia is also induced more pleasantly and quickly. The bottle must not be entirely filled,—about a third is sufficient. For one administration, where five or six teeth or roots are to be extracted, I am cautious, and pour from fifteen to twenty c.cm. into the bottle, since the remaining pental can be preserved, as it does not decompose. The return to consciousness after the narcosis is, as I have already stated, gradual. Even when the patients begin to look about, still they are ignorant as to their whereabouts or what has happened to them. However, as soon as full consciousness returns they are aware of everything that occurred : then only a minute or so ela before they leave the chair and depart. Perhaps a few still complain of a slight weakness, or itching in the ha and feet. Aphasia, giddiness, or violent headaches, tr bling of the whole body, trismus, etc.,—conditions descri by Scheff,—I have never observed. I have only noticed little excitement, which was probably due to slowness administering pental, and removed the same by immed withdrawal of the mouth-piece from the patient, and continuing until disappearance of all agitation, which, rule, lasted from ten to thirty seconds. I noticed a contr tion of the larynx in the case of a tall, robust young ma student of medicine, about twenty-three years of age. had hardly inhaled two or three times before he complai of asphyxiation, and after three or four further inhalation snatched the mouth-piece away, left the chair, and began run up and down the room, trying violently to obtain brea at the same time he stated in considerable excitement tha experienced such itching in the hands and feet, especially the muscles of the upper arms and legs, that he hardly co endure it. Only by running back and forth could he some alleviation. After this had lasted five minutes I allo him to inhale five or six drops of amyl nitrite from a ha kerchief, upon which his condition greatly improved. itching sensation in the toes remained for a little time, t all was well. Since this was the first case out of eight nine hundred narcoses, it may be classed as uncommon pental anæsthesia.

I only noticed one case of opisthotonos, and am convin that this is not a dangerous condition. My case was tha a very anæmic girl, eleven and a half years of age, wh I anæsthetized in the afternoon, and who had just recove from an attack of scarlet fever, which she had had four we previously. In this case I apparently had to do with a ref condition, something which is not uncommon with hyster people, which disappeared in from ten to twenty seco without the patient complaining of any later disagreea feeling. All cases of opisthotonos which Scheff obser were only of a reflex nature, since in reality opisthoto occurs only in cases of inflammation of the medulla spin or medulla oblongata, strichnine-poisoning, etc.

In general, I noticed that all pental-anæsthesias carried in the forenoon were more satisfactory than those done in afternoon, or immediately after a meal. At the de clinic in Vienna, all narcoses are carried out between six and seven in the evening. When the operation is finished, if patients have not entirely regained consciousness, I do not try to hasten recovery, but wait for a natural return. Perhaps the attempt by some dentists to immediately arouse patients after extraction is the cause of their not recovering more quickly, also of their complaining of all kinds of disagreeable after-effects. Violent headaches, which some patients are supposed to complain of after the narcoses, I have never observed; even slight headaches were entirely absent in all patients anæsthetised by me. Moreover, some patients who came to me with severe headaches said after the narcosis that they did not experience further pain in the head. A peculiar after-effect which as yet I have not noticed mentioned by any observer is that most patients are affected with a ravenous appetite. At all events, this result is a splendid contrast to that of chloroform or ethyl bromide, after the administration of which, at times, vomiting and nausea are the consequence. During my wide experience with pental, neither annoyance of the stomach, vomiting, nor nausea resulted. According to a personal communication of Dr. Alt, the ravenous hunger felt at times after such a narcosis originates from the action of HCl in the stomach, which is set free in larger quantities through the influence of pental, which is eliminated partly through the secreting glands of the stomach, and thereby at the same time effects a separation or setting free of HCl.

If we desire to expound the action of pental upon the entire organic system, then we are obliged, above all, to return to the effects of amylene hydrate, from which, by the extraction of one atom of hydrogen, pental is obtained. The influence of amylene hydrate upon the heart's action is of little or no consequence. In moderate doses, it works preferably upon the cerebrum; in larger quantities, upon the medulla oblongata and medulla spinalis; in very large doses the reflex disappears, breathing ceases, and finally the heart stops beating. The blood-pressure is slightly influenced. The only difference between amylene hydrate and pental is that the latter is insoluble in water and exceedingly volatile, accordingly is taken up by the body through the lungs very rapidly, even more quickly than ether; whereas amylene hydrate is soluble in water, and the effect much slower, perhaps fifteen to thirty minutes, because it is first gradually absorbed when in the stomach. The effect is the same, only the time required to produce the re different

From this is concluded that the anæsthesia sho induced as slowly as possible, with the access of a consi quantity of air, a fact to which I have already called att Other than the known facts regarding amylene hydrat as yet, in the case of pental, not been disclosed by phy cal experiments.

Lately two deaths were reported from the use of without further communications respecting the accomp particulars, and it was stated by some observers who po little experience in the use of pental that such disag symptoms appeared during the administration of pent they were obliged to desist in its use.

It is not definitely settled whether the deaths said caused by the use of pental can truly be attributed to the A case mentioned by Schirmer is worthy of notice. was about preparing to administer pental he noticed th patient stared at him, and was so void of mobility and bility that he already resembled the picture of an an tized individual. Schirmer felt himself obliged to re artificial respiration, owing to the imperceptibility pulse to the touch, cold-sweat secretions, and weak respi with much enlarged pupils. This condition lasted t minutes. If these symptoms had occurred during a narcosis, they certainly would have been ascribed anæsthetic. Especially this case is very edifying from points, much more so in the direction that before and the administration of pental great care and precaution be exercised, and the respiration must be most partic observed, because danger and trouble in a pental anæs may happen to the careless and inexperienced as wel any other narcosis.

Since I have been using pental one year, and made nine hundred narcosis, I can sum up and communica experience in the following brief sentences. Of cour assertions refer only to minor operations, as I have performed major surgical operations with the material.

1. Pental is an effectual anæsthetic in all cases, a that reason differs greatly from ethyl bromide, which i cases is ineffectual.

2. Anæsthesia is induced more slowly than with bromide, but lasts longer, and the patients only regai sciousness gradually.

3. The least excitement is extraordinarily rare. As yet, I have, regarding the following results, not observed any irritation of the stomach, nausea and vomiting, much less trembling, trismus, asphasia, etc.

4. Neither the heart's action nor inhalation is quickened during the administration; however, the pulse at times, especially in anæmic individuals, is somewhat weaker, whereas in very excited people it is slightly accelerated.

5. Generally two or three c.cm. are sufficient for anæsthesia in composed people. Ten c.cm. are adequate in most cases for the extraction of five to ten teeth.

6. Very excitabie and strongly anæmic patients, with a weak heart-action and an old bronchial catarrh, do not endure pental as well as healthy ones.

7. The best manner of administration is that with the Junker apparatus, the advantages being that the admission of the vapours into the lungs can be regulated, and that they are prevented from entering the eyes; also, that less is used, and the disagreeable odour for some people is not so noticeable. Professor v. Mering is at present trying through experiments to weaken the too quick effect of pental, and also to mask the disagreeable odour by the admixture of another preparation.

8. Anæsthesia takes place in from one to three minutes.

Notwithstanding all these advantages of pental, I do not wish to assert that it may or can be administered less observantly than any other narcotic. All clothing about the neck, chest, and abdomen must be loosened, and the respiration continually watched by a physician or trained assistant. The dentist or surgeon cannot operate and at the same time, during the operation, observe dangerous symptoms.

Without doubt, at times unpleasant, as well as dangerous symptoms, may occur through the use of pental, as well as with all other narcotics; but whether occasioned by pental, peculiar dispositions of patients, or lack of precaution on part of the physician, and how the same may be avoided, can only b decided by observation and experience of different workers.

Pental is at present, on account of its sure effect and the wonderfully comfortable feeling of patients after anæsthesia, the best narcotic for all operations of short duration.

The Dental Cosmos.

THE GENERAL AND LOCAL IN DENTAL PATHOLOGY.

By J. S. DODGE, M.D., D.D.S., New York.

THE remote relations of the teeth which still need study are effected either by the nerves, (whether the teeth are on the causative or the resultant side), or by general cachexias not well understood.

There can be no doubt that the constitution and the structure of the teeth partake of the general conditions of the system during the formative stage. This relation is a little obscured by the fact that the internal condition of teeth does not so readily fluctuate with changes of the general health as do most other tissues; because the process of nutrition and interstititial change is exceedingly slow. But during the formation of the teeth they are as easily influenced as other organs, and their subsequent condition, especially the difference often found in the same mouth between teeth of different periods, may frequently be accounted for by inquiring into the health of the child at the time when each order of teeth was forming. A relation so easily established authorises us to believe that a similar cause may some day be made out for more mysterious deficiencies of dental constitution, and pathological conditions be thus explained from within, for which no study of their surroundings shows any cause.

But the history of teeth is not wholly determined by the circumstances of their formation. Many observations have proved that a slow circulation pervades the dentine, maintaining a correspondingly slow process of renewal and interstitial growth. This process certainly produces at times increased density, and the presumption almost amounts to certainty that it sometimes retrogrades and causes detoriation. The evidence of this is not easy to disentangle, but it grows in distinctness. It has long been observed that the teeth rapidly decay during or immediately after some attacks of prostrating sickness and some pregnancies. The cause usually assigned has been a pathological acidity of the buccal fluids; but it is now established by researches in bacteriology, that except at the very beginning caries depends very little on external conditions; and therefore, if the long ecognized effects of sickness and pregnancy are facts, some use must exist which acts within the tooth. And such a cause does exist which is exactly in line with our present study. Experiments made by the writer some years ago, but never published, showed that when decay occurs in fairly well formed teeth, a zone of dentine immediately surrounding the cavity of decay has a higher specific gravity and yields more ash than a similar section from a sound side of the same tooth. This necessarily means a new deposit of lime salts apparently resulting from the irritation of decay. Now such a deposit in itself is of course a local affair, but it implies a heightening of vital activity which must be traced back to nerve centres. And it may well be assumed that besides the increase of density, the increased vitality of the dentine hinders, *pro tanto*, the ravages of the bacteria. If then this be the normal check upon decay, anything which so cripples the nerve centres as to prevent this opposition, leaves the tooth defenceless to its enemies, and destruction is far more rapid. Now to this failure of normal inhibition rather than to any local cause, the quick decay accompanying disease and pregnancy must be ascribed. Another field of quick decay reinforces this conclusion. In advanced life, when the general strength is impared, teeth which have borne the strain of a lifetime are seen to give way suddenly to decay, so that in a few months there will be little left of the crown except the enamel, the dentine being decalcified in mass. Of course something must have happened to make this possible, and not only general reasoning but the fact that these teeth are remarkably insensible under the excavator, indicates that the nerves which supply them have almost ceased to work.

From all these considerations it seems fair to conclude that the decay of teeth is far from being a purely local matter, and is greatly determined by the nerve-centres from which the teeth are supplied.

Another branch of dental pathology which was long treated as merely local, has come to appear still more dependent on general conditions—the whole group of pericemental affections loosely classed as Rigg's disease. Once every condition, from a slight marginal congestion to the suppurative inflammation of the whole membrane was called the result of "tartar;" and under this name were included both salivary calculus and the scales and stars of pericemental exudate which occur at all parts of an affected root. With this view of the cause it could not be doubted that some kind of local treatment would cure the disease; and the remedies warranted never to fail have been countless.

The fact is, however, that extreme deposits of salivary calculus, even masses as large as the tooth, are frequently found to have caused no worse trouble than a superficial inflammation with some absorption of the gum; while deep-seated lesions of the most fatal kind occur in mouths which have been kept carefully clean. There is some cause further back. Of course bacteria are invoked to explain it all, and they doubtless play a large aggravating part. But they cannot explain why one mouth welcomes and another rejects them under the same visible conditions.

The opinion of dentists is inclining towards one or another constitutional state as the predisposing and sustaining cause of pericemental trouble. We do not yet know much about it. Perhaps gout or rheumatism is at the bottom of it; perhaps the condition, not well understood, which promotes nasal catarrh.

To these two conspicuous topics might be added odontalgia; but of this so much is superficially known and so little profoundly, that it is hardly profitable for discussion. It is enough to say that the pains of the teeth are as frequently unaccountable as any others. The great majority, it is true, are due to local irritation traceable if sufficient diligence is used. But the commonest perplexity of dental practice is that one may do so much in one mouth without painful sequels, while so small a portion of similar treatment in the next mouth will prove disastrous. Nor has as much been anywhere said as might be of fugitive and unaccountable pains in the teeth. It often happens that the most searching examination discovers no local cause and that nothing in the subsequent history throws any light on the matter. Of course such phenomena are to be referred to reflex-action The fifth pair present so many points of possible irritation, and this is known to pass so readily from one branch to another, that it would be strange indeed if the teeth did not often complain of disturbances quite remote from them. Irregularities of position constitute another topic which might occupy us. When all the cases have been subtracted which can be explained by mechanical causes, a few remain which are partly ascribed to heredity and partly left without any explanation. It is probable that further study of these will to light constitutional causes, perhaps reaching back to fœtal life. But the whole matter waits for patient investigation.

This review, then, while it shows very much yet to be accounted for, also shows that dental pathology is but a part of general pathology and can by no means be studied alone.

And yet when we turn to the dentist's daily practice, we are surprised to find how much all this may be left out of account, how overwhelmingly the troubles which he treats admit of purely local explanation and cure. Indeed, the man who broods beside his operating chair over remote causes and turns his best attention to general remedies, will by-and-by find that chair empty, and will learn that he is a practical failure.

Let us next view the matter, therefore, from this side and see to how great a degree dental pathology is local.

Nobody doubts that uncleanliness of the mouth promotes decay ; and no theory of electro-chemical action nor any discovery in bacteriology can shake this long established result of observation. It is equally certain that the careful excavation and filling of any given cavity always retards and frequently ends forever the morbid process. It is worth while to add that when filling is unsuccessful and the question is raised whether the tooth or the operation is at fault, most practical dentists will incline, (if the operation is not their own), to suspect a fault in the filling.

One cannot speak quite so forcibly of local causes in pericemental disease. And yet the results of local treatment are so often beneficial that local causes must play a large part, and the attempt to trace these disorders back wholly to constitutional causes must not only fail but must seriously interfere with the discovery of improved local treatment.

As for the local causes of odontalgia, they are very numerous and sometimes so hidden that a diagnosis of remote causation is always to be looked upon with suspicion and most rigorously questioned. And this, with a little less emphasis, is to be said of dental irregularities.

It might seem that such a survey as has been here made leaves the whole subject in confusion, and dentists must again divide into two opposing camps as in earlier days—the medical dentists and the operators. But this can never be. There is no room for such strife, and if it could be attempted, the contest would be too unequal and would be speedily fought out. For all theories are subject to the test of facts ; and the fact is that the reason of our existence as dentists, the warrant for the high estimation in which our art has come to stand, is the possibility of relieving dental troubles by local operations. No amount of diagnostic acumen or of scientific learning will make a man a successful dentist who cannot give prompt comfort and safe assurance of future usefulness to the mouths of his patients. The writer hopes to be particularly understood as building, whether at the chair or in an essay, on the intelligent, patient, and skilful performance of dental operations, as the corner stone of dentistry. Whatever we may discover or invent, the day will not come in our time when there will not be ravages of past disease to repair and conditions of present disorder to cure. It will be indeed a happy day for the science of the teeth if there ever arise men with the leisure and learning necessary to work out the meaning of innumerable facts separately collected and recorded by practising dentists. A single such man devoting his life to this study and to the verification of such conclusions as might be drawn, would make for himself a name and for dental science new means of usefulness, so great that we can as yet hardly estimate them. But no man can possibly do this who is tied to the operating chair; and the zeal that works without fee combined with the fortune which makes this possible, does not yet seem to have fixed its attention on dental science.

Meanwhile what can we, who must do our daily tasks, also do towards broadening the horizon of dentistry, towards hastening the happy day when dental disorder shall be rather prevented than cured? Dentists have long nursed this hope, and the present paper aims to add another impulse in that direction. It is no violent exercise of imagination to fancy the dentist of the future receiving a new patient. The chair, the mouth glass, the probes will all be there, and the examination, tooth by tooth, as minute as now. Then will follow a series of questions covering the ancestry, the habitual surroundings, the personal history and habits of the patient, and at last the dentist will give his judgment. "You have such and such defects of the teeth," he will say, "which will all be duly corrected. You have this or that constitutional weakness which has caused or promoted your dental troubles. Or your diet, your occupation, your habits are at fault, and it will be necessary to make changes thus and thus." After six months perhaps the patient will return, the examination will be repeated, the regimen approved or changed as results may have appeared. In a few months or years the patient will have ceased to have any further dental disasters beyond the inevitable wear and tear of hard used organs; and after two or three generations a race will be produced in whom dental disorders will rank with pulmonary or ocular diseases, always possible but commonly escaped.

Dental Register.

THE TEETH DURING PREGNANCY.

The belief is very common among dentists that the teeth of women suffer during gestation, because of the needs of the growing organism. That in some way the teeth of the mothers are robbed of their lime salts, to supply the demands of the fœtus. We cannot but think this a grave error.

For a long time the late Dr. John Allen annually presented a paper before some dental body, devoted to an exposition of the wrong done by the millers in bolting flour. He reasoned after this manner: The teeth of Americans are notoriously bad. Those of the savage tribes are as notoriously good. The gluten of grain lies next the bran. The Americans bolt this out that they may get flour that will make white bread. Savage tribes do not do this. The bad teeth of our people are due to a lack of this bone-making material in their food. Hence the millers of the country are responsible for our bad teeth.

This was ingenious, but it contained a number of serious errors. Perhaps the most important of these lies in the second predicate, for it is not true that aboriginal or savage people have good teeth. On the contrary, some barbarous tribes have worse teeth than Americans.

Again, while it is true that the gluten of our cereal grains is especially rich in phosphates, it is not true that fine flour is without sufficient for all the needs of man. The following computation has been made : If rice flour, which contains as little of the phosphates as any other common food, were the sole nutrition of a pregnant woman, and if she consumed barely enough to maintain a healthy existence, she might obtain from that alone double the amount that would be needed for herself and the growing child. It is well known that women always excrete phosphates during gestation. Fine wheat flour contains more of the bone-making elements than does rice flour ; hence it cannot be that our bad teeth are due to lack of the proper material in our food.

The corollary to the hypothesis so long held concerning the nutrition of the teeth, naturally was that the lack of lime salts in the food must be artifically supplied, and hence the many preparations of calcium that were formerly urged upon the people. The truth is, that under no circumstances can the animal organize the inorganic. That function rests solely with the Vegetable Kingdom. All of the inorganic elements of the body must be derived from organic sources. Hence it is the wildest kind of vagary to prescribe any inorganic material for nutrient purposes. It cannot be built into the tissues, and must invariably be excreted if taken into the animal system. No inorganic matter was ever yet accepted and built up by any animal organism. Such elements may have their uses in the system, but it must always be as medicines. Their presence may induce structural changes through their medicinal action, but they themselves are never used for trophic purposes. It follows, then, that the giving of any form of the phosphates, in the expectation that it will be used in nutrition, is the result of ignorance ot physiological law.

To go back, then, to the cause of the decay of the teeth during pregnancy. It cannot be due to the lack of the proper ingredients in the food, provided the mother has sufficient of that which is wholesome. If the nutrient processes are in a healthy state, they will find plenty of material out of which to build bones and teeth. Besides, if there were a scarcity of the lime salts, why should it manifest itself in the teeth alone. Or, being felt, why would not the number of teeth be diminished instead of the quality? Why might it not be that there are but four toes, or fingers, or why should not some bone be deficient in length, or size, if the material proved insufficient?

But that the teeth of the mother should be robbed of their lime salts to help out the fœtus, seems to us the most absurd of theories. There could be but one way in which the tooth could thus be depleted. There must, in that case, be a solution of the salts and their taking up by a system of absorbents. But there are no such absorbent vessels in the tooth.

It is true that under certain circumstances a tooth may be absorbed, but when this is done the whole of the tissue goes; it is taken up into the system by absorbent vessels, whence it is excreted. To secure this result a special system of cells is developed—the osteoclasts—and these do the work. There are no such, or any other, absorbent cells in the hard tissue of the tooth, and hence there cannot be any such absorption.

There is no doubt that the character of the tooth tissue changes with its nutrition, or mal-nutrition, but not through any such process as that sometimes claimed. No, the expectant mother neglects her teeth. She has sufficient upon her mind to make her forget the tooth-brush. She goes to bed with her attention fixed on other matters, and her teeth are neglected. She awakes in the morning, perhaps with nausea, and she is in no mood to brush her teeth. Besides, her appetites are apt to be capricious, and she deranges her stomach by improper food, or possibly it sympathizes with the gravid uterus. The secretions are perhaps changed, and these morbid conditions add to the trouble. Her nutrition is interfered with, and the teeth are not properly nourished.

Dental Practitioner.

THE TREATMENT OF EMPYEMA OF THE ANTRUM OF HIGHMORE.

Professor Chiara, of Vienna, reports twenty-eight cases of this affection, and formulates the following rules as to treatment:—

1. In very rare cases empyema due to alveolar periostitis, may be cured by extraction of the root of the offending tooth alone. 2. Continued irrigation of the nose may also effect considerable improvement. 3. Injections into the antrum, even if undertaken regularly and thoroughly, frequently do not bring about a cure, although, as a rule, some improvement. 4. In cases of recent suppuration resulting from alveolar periostitis, a few injections usually suffice to produce a cure. 5. In only one case was it found possible to successfully inject the ostium maxillare in such manner that pus was discharged together with the injected fluid. 6. Systematic injections can be easily and conveniently made through the alveolar process, to make them through the

lower nasal passage is a very laborious procedure, carried out by the patient only with great difficulty. 7. Insufflations of iodoform powder do not give positive results. 8. During all these various proceedings the antrum should be closed up toward the mouth. 9. The most reliable results are afforded by tamponing the antrum with iodoform gauze, which rapidly arrests suppuration. It should be practised only once a week; can be easily carried out by every physician, and shuts off the antrum from the mouth. 10. Preparatory to tamponing, an opening varying in size from four to six millimeters is usually made in an alveolus. The opening may be made in the canine fossa, but only if a perforation exists there already, or the patient refuses to sacrifice a tooth, or if it is desired to thoroughly curette the cavity. Tamponing through the canine fossa, however, is always a difficult and painful procedure.—*International Journal of Surgery.*

EUCALYPTUS TOOTH-PASTE.

Precipitated chalk	℥iij.
French chalk	℥ij.
Powdered white soap	℥iss.
Starch	℥iss.
Carmine	gr. xv.
Oil of peppermint	♏xv.
,, rose geranium	♏xv.
„ eucalyptus	ʒss.
„ cloves	♏vj.
,, anise	♏vj.

Glycerine and spirit, of each a sufficiency to make a paste.

Reports of Societies.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

Annual Meeting, May 10th, 1893. The President, Mr. P. A. Linnell, in the chair.

The Minutes of the previous meeting were read and confirmed.

Mr. Stoner was proposed and seconded as a member of the Society.

CASUAL COMMUNICATIONS.

Mr. **Fisher** sent three specimens.

(*a*) Cast of a lower jaw in which the right canine was displaced in front of the right lateral and in range with the centrals.

(*b*) Another cast of a lower jaw in which the left canine was displaced. Here the canine was situated towards the middle line of the mouth, but a little to the right side; its distal edge was turned outwards to the lips.

(*c*) Dilaceration occurring in the root of a lower molar.

Mr. **Headridge** showed an upper model with a supernumerary tooth in the incisor region.

Mr. **Kloet** sent the following specimens for the Society's museum:

An articulated skull.

Specimens of bone work, and also a few sets on vulcanite when this article was first introduced into this country.

Mr. J. A. **Lees** then read the Council's Report for the session 1892—93.

Mr. **Tanner** proposed and Mr. **Sibson** seconded that the very efficient report presented by the Council be adopted. This was carried unanimously.

Mr. L. **Tanner** then read the Treasurer's Report.

Mr. D. **Headridge** in proposing the adoption of this report said that he was gratified to learn that the Society had a better balance at the bankers than any they had in the previous years. This was the more surprising because the Society had been put to a large expense in printing and publishing a new set of rules.

Mr. J. **Theakston** seconded the proposition which was carried unanimously.

The **President** then called upon Mr. Sibson to read the annual report respecting the library and museum.

Mr. A. **Leeming** moved, and Mr. J. A. **Lees** seconded that the report be adopted.

The election of officers for the Session 1893—94 was then proceeded with. The voting was carried out by means of ballot papers, Messrs. J. Theakston and P. Mawson acting as scrutators.

The following is a list of Officers :—

President—F. W. Minshall.
Vice-President—P. A. Linnell, D. Headridge.
Treasurer—F. L. Tanner.
Secretaries—J. A. Lees, J. Wood.
Editor of Transactions—A. Leeming.

Librarian and Curator—F. Bellaby.

Councillors—J. Theakston, J. P. Headridge, G. H. Booth.

Mr. Minshall proposed and Mr. Lees seconded that a very hearty vote of thanks be given to the President, Mr. P. A. Linnell, for the admirable way he had conducted the meetings during the session just passed. This proposition was carried. with acclamation.

Mr. LINNELL in reply said that he thanked all present for their vote which had just been accorded to him. He was aware that the duties of the president were not slight, but when he said that he had been guided and helped by the hon. secretaries in every possible way, it would seem to members that those duties could be made easy and insignificant. When he took the office last year he was surprised that the Society should have placed at their head a member as young as himself. But this sense of surprise had now worn off, for they had this year continued in this new manner of infusing new blood into the Council. He referred especially to the election of Mr. Minshall as their future President as a man who was able to fully maintain the dignity of the post.

The newly elected President, Mr. Minshall, then took the chair.

Votes of thanks were then accorded to the various Officers of the Society, which were carried unanimously,

The proceedings then terminated.

Dental News.

APPOINTMENTS.

Charles John Ogle, M.R.C.S. &c. appointed Anæsthetist to the National Dental Hospital.

Charles W. Glassington M.R.C.S., L.D.S., appointed Dental Surgeon to the National Dental Hospital.

Sibley W. Read, L.D.S. Eng. appointed Assistant Dental Surgeon to the National Dental Hospital.

VACANCY.

Victoria Dental Hospital, 16 Devonshire Street, All Saints. Manchester. The post of House Dental Surgeon is vacant. Applications to be made to the Secretary.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

"AN APPEAL FOR HELP."

To the Editor of the "British Journal of Dental Science."

Sir,—We beg to acknowledge with thanks, the receipt, up to the present, of the following subscriptions to the fund being raised for the widow of the late Mr. Minett.

Any further sums will be thankfully received and acknowledged by

Yours truly,
F. E. CUTTS,
28, Old Burlington St., W.
Wm. RUSHTON,
32, Harley St., W.

	£	s.	d.		£	s.	d.
Ash & Co., Ltd. ...	1	1	0	"W. H. N."	0	10	0
Clark, C. A.	1	1	0	Palmer, Dr. Foster ...	2	2	0
Clements, H.	0	10	6	Pedley, R. D.	2	2	0
Cutts, J.	1	1	0	Pedley, S. E.	2	2	0
Cutts. F. E.	2	2	0	Prager, Arnold ...	1	1	0
Edgelow, Percy ...	1	1	0	Reece, T. C.	1	1	0
Faro, R. S. N.	1	1	0	Rushton, Wm. ...	1	1	0
Fisk, E. C.	1	1	0	Shefford, J. E. ...	0	5	0
Fisk, Wm.	1	1	0	Smith, A.	0	10	6
Fogg, A.	1	1	0	Smith, J. W.	1	1	0
Gaddes, Dr. T. ...	0	10	6	Spokes, Sidney ...	1	1	0
Greetham, P.	0	10	6	Timms, S. D.	0	10	6
Humby, W. R. & D. M.	5	5	0	Venning, Edgecombe	1	1	0
Johnson, H. W. ...	0	5	0	Wright, F.	1	1	0
Jones, A. S.	1	1	0				
Longhurst, Sidney & Bell	5	5	0		£41	8	6
Maughan, Dr. Jas. ...	2	2	0				

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester, during the month of May, 1893.

Number of Patients attended .	905
Number of Extractions . .	476
Number of Extractions under Anæsthetics .	161
Gold Stoppings . . .	46
Other Stoppings . . .	201
Miscellaneous {advice, temporary fillings, scalings, dressings, &c. . .	337
Crowns	4
Irregularities . . .	27
Total . . .	1252

J. C. LINGFORD, L.D.S. Eng., *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

Twelve Months (post free) - - 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 612. LONDON, JULY 15, 1893. Vol. XXXVI.

A CASE OF REPLANTATION.*

W. B. MacLeod, L.D.S. Edin.

Cases of replantation are neither new nor unsuccessful. As to the antiquity of the operation we can go as far back as the literature of surgery can carry us, and as to its success, this has been established in the authentic record of numerous cases from the earliest period of the practice of our speciality as an independent branch of surgery. Yet though thus old, every succeeding case is worthy of being placed on record, as, apart from special circumstances which may make it individually interesting, it keeps before the mind of the busy or the young practitioner the possibility and propriety of restoring an avulsed tooth to its socket.

The models which accompany this communication are of the upper and under teeth of a strong and healthy youth 13½ years of age. I took the impressions for the purpose of securing the models of a slight abnormality; that in the under denture being the most interesting. On the left side there are four well-formed and massive molars, two of these being the temporary molars, and the other two being respectively the first and second permanent six and twelve-year-old molars.

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* Read before the Odontological Society of Great Britain.

To a hasty observer or to a general scientist aware that there should be only three molars in the human adult, the appearance that this side presents might lead to the conclusion that the individual was the happy possessor of one more grinder than his less fortunate brethren, or if seen in the mouth of a savage might give rise to the statement that this particular tribe still retained the molar which was missing in the mouths of the more civilised peoples, a statement which has been made more than once, but which this and other instances of a like nature justify us in setting down to hasty and inefficient examination. The upper model had nothing more extraordinary to show than the retention of both temporary canines in a well-formed and uncrowded arch, and I took the impression of it more as a companion to the under, and to possess a complete reproduction of the mouth. As it turned out, however, it came in to be most serviceable. Within a fortnight of taking the casts the mother of the lad came to me in great distress, stating that her boy had got several of his teeth knocked out with a cricket ball. He had been attended to by the school doctor, who reported that his eye tooth had been broken, the lateral knocked right out and the central driven into the mouth, and it was now so loose that he feared nothing could save it. She, however, thought that the dentist was the proper man to consult under the circumstances, and came to me to see what could be done. I recommended her to go to the school at once, bring up the boy, and be sure to bring the broken and knocked out teeth if they were still to the fore. In a few hours she returned bringing the boy and one tooth —the lateral—which after a diligent search had been found on the cricket field. This was thirty-six hours after the accident. The broken crown of the eye tooth was still attached to the gum when the doctor first saw him, and he had removed it and thrown it away.

On seeing the boy I recognised my patient of a fortnight ago, and producing the casts was able to show that the supposed broken canine was only the temporary one, and that its permanent successor lying snugly in the alveolar socket would soon make its appearance and more than probably prove free from injury Now, to restore the lateral to its socket and the central to its right place in the arch, I filed a little bit off the end of the root, drilled through the coronal surface of the lateral into the pulp chamber, removed the dessicated pulp, filled the canal and pulp chamber with gutta percha and capped it with gold. I then washed the lateral in warm water and, after immersing it in a weak solution of bi-chloride of mercury, replaced it in its socket. The time I had been doing this my assistant had moulded a plate of shellac on the original model, to the lingual surfaces of the teeth and the palate. Holes were drilled in this behind the firm central incisor and the bicuspids. The displaced teeth were pushed back to their place in the arch, the plate inserted and tied in with silk, and the lad dismissed for the day. By the next day I had a similar plate made in vulcanite with the addition of a small cap of soft gold coming over the central and incisor, which cap made certain that these teeth would not become elongated. The plate was worn a fortnight, and the teeth are now firmly fixed and healthy looking. I hope on some future occasion to show you the model of this mouth when the permanent canine has erupted.

Prof. Peabody, of Louisville, Ky., says that he finds physiology, and especially histology, to be the most ungrateful subjects for the teacher. They are difficult to understand and the student is too apt to give his attention in a perfunctory manner, with the idea that the knowledge thus forced upon him will never be of any practical use to him. They say "I don't see what the physiological structure of a tooth has to do with filling a cavity, or making an artificial denture. I have got my sheepskin and I am satisfied."

SOME FORMS OF ALVEOLAR ABSORPTION.*

By W. A. Hooton, L.D.S. Eng., M.R.C.S., L.R.C.P.
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Dental Surgeon to Victoria Dental Hospital.

Gentlemen,—The subject to which I beg to invite your attention to-night is perhaps best denoted by the title "premature shedding of the teeth." Although more teeth may be lost as a result—immediate or remote—of caries, in how many cases do we find that a denture which may be better than the average, as regards freedom from caries, fails rapidly and becomes almost functionally useless long before any other signs of advancing age are evident, not unfrequently even in middle life. The gums recede at the same time that the bone of the alveoli wastes away, and the teeth becoming loose at last fall out and yet there may be no signs of inflammation in these structures, or any obvious cause for the condition.

In some cases, however, the cause is sufficiently apparent. *Tartar* is perhaps the most common cause, although the remark of one author that "tartar is causing the loss of more teeth than caries" may well be taken *cum grano*.

It is perfectly true that a calcareous deposit is found more often than not on these teeth, but from the nature of the case when the disease is once started, a sulcus is soon formed round the affected teeth which provides a favourable site for such a deposit, and one sees cases sometimes where not a particle of tartar is to be found, showing that its presence is not essential to the disease ; and again, one often finds that when tartar is present, it is confined to the region of the neck, the greater part of the root remaining free.

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* Read before the Manchester Odontological Society.

Gout is another cause, and its action has been explained as leading to a deposition of the characteristic deposit of urate of sodium in the substance of the alveolo-dental membrane, in common with the other fibrous structures of the body leading to tenderness and loosening of the teeth. Exhausting illnesses have also often brought on the disease.

An undoubted cause of loosening of the first teeth is rickets although, I believe, not generally noticed by dental writers. (Hilton Fagge, p. 853, Meigs & Pepper, Bristowe, p. 900), but here the permanent teeth are not affected ; the bones of adults who have been the subjects of rickets being indeed denser than normal. The question of a possible bacterial origin has been investigated by Black, and also by Miller, but so far with a negative result. Black, however, expresses the opinion that it may be transferred from one mouth to another by means of instruments, &c.

To explain some cases not referable to the foregoing causes, the theory has been advanced that the cause is *constitutional*, and this has the support of no less an authority than Mr. Bland Sutton (Trans. Odonto. Soc. Dec. 1884, and April, 1885). We must bear in mind, however, that his deductions are in the main based on facts observed in comparative pathology. Now animals in the wild state are not subject to this disease, although it is fairly common in captivity. The Kangaroos, however, are an exception, and frequently lose their teeth. He describes particularly the appearance presented by an Opossum, afflicted with a disease resembling mollities ossium, in which the teeth were loose, and came away with the mucous membrane when stripped off ; an Anaconda, a Lemur, and a Marmoset, of which the two last were suffering from Rickets ; and his investigations show that in animals, especially young animals, and in captivity Rickets is an extremely common cause of loss of teeth, and in a fewer number of cases of diseases resembling mollities ossium, and rheumatoid arthritis: He sums up: "With this array of facts before us, and be it remembered these cases are only selections from numbers which come before me, it must be conceded that *in animals* premature falling of the teeth is associated with constitutional diseases. Do the same facts apply to the human race? Further inquiry has strengthened that conviction, and it may now be stated that in many instances such is the case."

Now I fail to see that we have sufficient evidence to sustain this conclusion. It is true that Rickets, as we have already seen, may affect the teeth of children, but the disease under consideration is one of middle or later life, and of the other two mollities ossium is decidedly rare and rheumatism cannot be said to account for many cases, so that I think we must admit that we are still quite in the dark as to the causation of some forms of the disease.

Symptoms.—Passing over the cases due to tartar one notices that one tooth or many may be affected, and that the back teeth are, if anything, more liable to the disease than the anterior teeth. The course may be rapid, or may extend over several years, and the symptoms vary a good deal.

In some cases the gums maintain a normal colour, the only change noticed being a round and swollen free edge round the teeth, which are no longer closely embraced by the gum. The teeth eventually drop out, with little or no pain.

In others a fœtid discharge oozing up around the tooth, is a prominent symptom from the first. The separation from the alveolus is often extensive, sometimes taking place equally all round the tooth, sometimes in the form of pockets, in a direction along the fang, up which a probe may be passed for some distance. It is not surprising that there should be some amount of gastric disturbances. In the case of the upper molars the palatine root is frequently the first affected, and may give rise to pain from exposure of the nerve at this point, a very interesting condition, to which Mr. Matheson called attention in a paper read some time ago before this Society.

It is to be regretted that the term "pyorrhœa alveolaris" has been applied to all the cases. It should, I think, be used to denote a symptom, not a disease, for on the one hand, you may have cases when there is no discharge of pus, and on the other, the pyorrhœa may result from the irritation of tartar, or from other affections of the gums. It is really only a symptom which is sometimes present, at other times absent.

Treatment.—In the early stages a good deal may be done to retard the disease, even although we may not be able to effect a permanent cure. A careful examination of the mouth will show the extent to which the different teeth are affected, and also whether the case is complicated with the presence of tartar.

One would scrupulously remove all deposits; a process tedious enough, but one which can be made more certain by frequent syringing with warm water into the sulci around the teeth. Opinions will differ as to the best instruments to use. Personally I find that How's set of scalers, together with one of Lord's sickle pattern, meet the case sufficiently well. An ordinary spoon excavator is valuable and better still one of rather large size, with a modification shown to me by Mr. Whittaker (the edge being ground so as to be slightly concave). After a thorough use of scalers and revolving brushes with powdered pumice, I apply pure carbolic acid into the sulci and repeat this when possible every 2 or 3 days for a week or more. A useful application is a solution of Hydrarg. Perchlor. in Peroxide of Hydrogen, (gr. 1 to ℥ij) and if the gums are much congested, and bleed readily, an astringent mouthwash will be useful, such as Tannin in Eau de Cologne, (ʒi to ℥i.)

Any teeth which are very loose and tender, we should do well to remove at once, and others which are in a less advanced state may be rendered comfortable by the support of a vulcanite plate bearing the artificial teeth required and carried round the remaining teeth and well up the necks. The treatment advocated by Rigg, consisting of the removal of tartar, then scraping the edges of the alveoli, followed by the application of Aromatic Sulphuric Acid seems not to be followed by sufficient success to justify such severe measures.

In conclusion, gentlemen, it only remains for me to thank you for the attention with which you have listened to a somewhat desultory paper, and to express the hope that we may derive from the discussion which is to follow, some help in a class of cases which are apt to be troublesome and often unsatisfactory.

FRACTURES OF THE LOWER JAW.*

By Mr. Snape.

Mr. President and Gentlemen,—

The subject of my paper to-night is one which perhaps appertains more to the general surgeon's work than to the dentist's, but the assistance and advice of that specialist being so necessary in the treatment of both the upper and lower jaws makes the treatment of this form of injury a not unimportant branch of dental surgery.

Fracture of the lower jaw is usually caused by direct violence, such as a blow or fall, but may be also caused in the extraction of teeth, extensive fractures of the alveolus being occasionally inflicted in this operation, though not so frequently in the lower as in the upper jaw.

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* Read before the Students' Society, Liverpool Dental Hospital.

Fracture of the jaw is most frequent in young people, as, in advancing age, the slackening of the ligaments renders the bone more liable to dislocation than fracture.

Any portion of the jaw may be broken, but the body is most frequently fractured, and it is with fractures of that portion of the bone that I propose chiefly to deal, for they are of most interest to us as dentists.

Fracture of the body of the jaw is almost invariably compound into the mouth, owing to the close union existing between the gum and periosteum, but is not commonly compound towards the face. When such is the case, it is usually due to such an injury as a kick from a horse. Fractures caused by tooth extraction are mostly confined to the outer plate of the alveolus, and are not of great importance unless involving the sockets of neighbouring teeth, when their loss may be occasioned. As a rule, however, they only anticipate the normal absorption of alveolus following upon the removal of a tooth from its socket.

Fractures of the jaw may be single or multiple, and are usually oblique in direction, the thickness of the bone being also obliquely divided, except at the symphysis, where the line of fracture is in the neighbourhood of the canine tooth, probably owing to the size of the root of that tooth, rendering the bone weaker at this point. The ramus is not so frequently broken, being protected by the thick masseter muscle, which covers it extensively. Fractures of the rami, coronoid processes, or condyles may be difficult of diagnosis, and do not admit of any other form of treatment than bandaging and rest.

The diagnosis of fractured jaw is usually simple. On mastication there will be pain, crepitus, and an unusual degree of mobility. On examination in the mouth, laceration of the gum may be found, with possibly, exposure of the fragments, and in recent cases hæmorrhage. Marked displacement of teeth and derangement of the bite will also in most cases be present. On manipulation, crepitus may be heard, though the absence of crepitus is not proof positive of the absence fracture, as it may be masked by the presence of mucus, or blood clot, between the fragments. Manipulation should be avoided as far as possible, as it gives pain, and causes laceration of soft parts. The displacement of the fragments of bone is due to the overriding caused by muscular action and the usual oblique direction of the fracture. In single fracture on one side of the symphysis, the smaller fragment tends to override the larger, being drawn outward and slightly forward by the temporal and masseter muscles, principally the latter. In double fracture on each side of the symphysis this deformity will be complicated by the geniohyoid and digastic muscles, which, contracting, draw the middle piece downward and backward to the hyoid bone, fragments overriding it in consequence of the action of the masseter muscles.

Severe hæmorrhage is seldom met with in fractured jaw, though rupture of the inferior dental artery might frequently be expected. This is probably due to the elasticity of the artery, which allows it to stretch and so escape tearing.

Injury to the inferior dental nerve is also of uncommon occurrence, but may happen at the time of the fracture or subsequently from the pressure of callus, in either case causing paralysis, or neuralgia.

Fracture and dislocation of teeth are common complications. Fractured teeth should be at once extracted, but those merely loosened should be replaced in their sockets and, if necessary, ligatured to their neighbours, as they stand a good chance of becoming reattached and useful.

Necrosis of small portions of the bone often occurs, especially in comminated fractures, without grave result, but when extensive, serious deformity may ensue. Mr. Christopher Heath mentions in his "Injuries and Diseases" a case in which a sequestrum comprising the whole of the body of the jaw from the first bicuspid on the right, to the second bicuspid on the left, came away, the remaining portions of the jaw falling together and forming a short V-shaped mandible, which had to be artificially restored. In cases of displacement of fractured parts, which have, from various reasons, not been rectified, irregular union is apt to take place, causing great disfigurement and interference with mastication.

Non-union and false joint may result from want of rest or faulty apposition of parts. Non-union, if taken early, can generally be cured, but after the edges of the bone have become rounded off, or a false joint has been formed, treatment is hopeless.

The treatment of fractured lower jaw is, as a rule, attended with favourable results, firm union usually taking place in about six weeks. The apparatus used in maintaining the injured parts in position, may be divided into two kinds. viz., those internal and external to the mouth. The former are interdental splints, sutures, ligatures, &c., bandages and splints the latter. The most common, and almost universal bandage is the four-tailed, made from a roller bandage about a yard long and 3 in. in width. This has a slit 3 or 4 in. long in the centre, parallel to and about an inch from the edge. The ends are then split to within a couple of inches from the slit. The bandage is applied by putting the chin into the slit, the narrow border being in front of the chin. The broad border passes under the chin and is tied on the top of the head, the other being tied round the neck, the ends of the upper and lower bandages then being tied together. In conjunction with this bandage, or sling, a splint may be used. It is made of gutta-percha or poro-plastic felt, cut into a pattern resembling a four-tailed bandage, which is softened in warm water, and moulded to the shape of the chin. The splint must be thoroughly padded, and the securing bandage not too tightly adjusted, as pressure of the splint on the bony eminences of the chin is liable to cause splint-sore.

While wearing such a splint and bandage, the patient can be fed through a tube passed into the mouth, either through a gap in the front teeth or behind the molar teeth.

The interdental splints are made of metal and vulcanite. These are more closely adapted to the parts to which they are applied, than the external forms of apparatus, and require the assistance of a model for their construction. Sir John Tomes recommends that the impression for the model be taken without the correction of any displacement which may be present, this being afterwards done by sawing through the model and adjusting the pieces so as to restore the bite. It is not necessary to have the model any deeper than the teeth.

A capital interdental splint is devised by Mr. Hammond. It is made of thick wire fitted accurately to the dental arch at the necks of the teeth on each side, making a band enclosing the whole of the teeth. The ends of the wire are then soldered together and the splint secured to the teeth by ligatures of fine binding wire. This makes a very clean splint which occupies a very small space in the mouth and distributes the pressure over the whole of the jaw.

Metal caps may be struck up over the teeth with a gutta perch lining to them, and secured by screws passing between the teeth, or by wires soldered to the plate, passing out of the mouth, and secured to a gutta-percha splint.

Dr. Gunning, of New York, has contrived a series of vulcanite splints similar to the metal caps described above, enclosing the whole of the teeth of the lower jaw, and resting against or enclosing the upper, as the displacement of the fragments requires. These are retained in the mouth either by screws passing between the teeth or by metal wings passing out of the mouth and attached to a skull cap, or when the fragments are adjusted to the splint, the jaws are bound together by a four-tailed bandage. All the forms of interdental splint, capping the teeth, should be perforated for the escape of discharges and the irrigation of the enclosed parts with antiseptic lotions, which will prevent decomposition in the mouth.

The late Mr. Thomas, of this city, brought into favour a method of suturing the fragments of bone with stout silver wire, by which good results have been obtained. A variety of this treatment, contrived by Mr. Bickersteth, also of this city, is the insertion of pegs of metal into the bone on each side of the fracture which are then firmly connected by metal ligatures.

Ununited fracture may often be successfully treated by any of these interdental splints or sutures, after the ends of bone have been scraped or vigorously rubbed together, to promote inflammation and formation of new callus.

In the treatment of all the fractures of the lower jaw, the most perfect rest possible must be given to the injured bone, and all such exertion as mastication should be strictly forbidden. All antiseptic precautions should be rigorously observed, and the patient's general health should be maintained as much as possible.

NOTES ON A CASE OF UNILATERAL BONY ANCHYLOSIS OF RIGHT TEMPORO-MAXILLARY JOINT.*

By A. Alex Matthews, L.D.S. Eng.

A. B., a schoolboy, aged 13, was admitted into the Bradford Infirmary under the care of Mr. Wm. Horrocks, Sen. Surgeon to that Institution, with whom I watched the case.

History of the case is somewhat obscure. When 3 years old, patient, with right side of face swollen, and complaining of toothache, was attended at the Wakefield Hospital for disease of jaw. A lower decayed tooth was extracted. Two years later a sinus formed in front of the ear, and another formed behind the angle of the jaw, the latter appearing first. A piece of bone, the necrosed condyle and neck of jaw, was removed through the opening by the ear when he was 7 years old, after which the sinuses closed. For several years the patient was quite unable to separate the teeth, and food was taken by thrusting it between his teeth with his fingers.

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* Read before the Odontological Society of Great Britain.

On January 23th, 1893, the face is asymmetrical, with considerable broadening of the right cheek. Behind and below the angle of the jaw, on the right side, is a depressed cicatrix. A linear scar is seen above the zygoma ; the tissues over the right ramus are much thickened. On placing the fingers over the temporo-maxillary joints, and directing patient to open his mouth, slight movement is felt on the left side, but the right is immovable. The right ramus, from zygoma to angle, measures one and a-half inches, the left two inches.

On passing the finger into the mouth the mucous membrane is bound down to the bony thickening along the front of the ramus. The right masseter is thin, and contracts feebly. Patient is able to thrust the lower teeth a little in front of the upper.

On January 27th, 1893, patient having been anæsthetised with chloroform, a linear incision, three inches long, was made a quarter of an inch above, and parallel to the zygoma. The tissues were dissected down, and the upper part of the jaw exposed. The jaw was much broadened from before back, very dense in structure, and firmly anchylosed by bony union to the temporal bone. Near its upper part the jaw was sawed through with an Adams' saw, the division being completed with bone forceps. The jaws were then separated about an inch by a wedge gag inserted between the incisors. A smal piece of bone was removed from the back of the ramus.

The wound was sutured, and healed by first intention in four days. The jaws were subsequently separated by insertion of a screw wedge. On one occasion nitrous oxide was given and the jaws forcibly separated.

At present the separation between the canine teeth is rather greater on the right than on the left side. The separation of lower from upper incisors is five-eighths of an inch. The gliding or lateral movement of the jaw is imperfect. Patient is able to masticate his food without difficulty.

On May 17th the patient feels in excellent health. Can eat anything without difficulty or inconvenience. The separation of five-eighths of an inch maintained. In opening the mouth the jaw moves downwards with slight inclination to the right, and in the lateral movement the jaw is extended more to the right than to the left side.

Remarks.—Cases of temporo-maxillary anchylosis are sufficiently rare to merit a review of some of the previous cases, and a comparison with the case under consideration. Mr. Heath ("Lectures on Some Diseases of Jaws," 1887) records a case of unilateral bony anchylosis from which he had removed half an inch of bone below the condyle. The case did well. In a case of bony anchylosis under the care of Dr. Abbe, New York, the apparent cause was suppurative otitis media. A vertical incision was made in front of the ear, and a horizontal one along the lower border of the zygoma. The parotid gland and facial nerve having been drawn down, the bone was divided with a chisel. The neck and condyle were removed piecemeal. Mr. Heath also relates a case in which he divided the jaw with an Adams' saw passed into a small incision above the last molar tooth. In *Annals of Surgery*, February, 1893, is an account of a case of bilateral bony anchylosis, under the care of Dr. Borelli. The condition was due to a fall twenty years before. When seen the jaw was ill developed and receding, like an idiot's. The angles are very obtuse. The jaws could be only separated a millimetre. Vertical incisions were made on each side and the joints resected, so that separation between the incisors after the operation was five centimetres. Subsequently the condition recurred.

The early history of the present case is obscure, but the bony thickening over the front of the ramus and the absence of ear symptoms favour the supposition that the mischief began in the back of the alveolus. The width of the bone and the shortening from above down are due to removal of condyle and the neck of jaw.

The incision was made above the zygoma, to avoid branches of the facial nerve, which in the present case apparently escaped division. A circular saw one inch and a quarter in diameter, attached to a dental engine, was in readiness, but could not be used for dividing the bone owing to its deep-seated position.

Dental college graduates are entitled to administer general anæsthetics, yet how many know the normal rate of heart beats, or pulsations? How many can explain the action of chloroform, ether, nitrous oxide or cocaine, and by what means they cause insensibility? How many can tell the relation the fifth pair of nerves bears to those governing the heart's action, and why the danger incurred in giving an anæsthetic is greater when *they* are involved in the operation to be performed?—*Dr. J. D. Killian.*

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INTERNATIONAL AMENITIES.

It is unfortunate that the proportions of such an affair as the Chicago Dental Congress did not allow of the preparatory arrangements being carried out with more simplicity. The different names of organising bodies, charged with authority, have so tended to complicate the matter, that it seems difficult for the ordinary unsophisticated dentist to comprehend which is Codlin and which is Short. When one meets with the designations "General Executive Committee," "World's Congress Auxiliary," "Advisory Counsellors of the Dental Congress," all used in connection with the management of the arrangements for the "World's Columbian Dental Congress," it is, perhaps, not to be wondered at that ordinary outsiders become somewhat confused; and, as a matter of fact, it appears that the divided responsibility of these different authorities has brought about a regretable misunderstanding on the part of those who might be expected to be really interested in the matter.

The World's Congress Auxiliary issued a circular which took the form of a Preliminary Address. This we printed at page 907 of last year's Journal, and certain statements it contained have not proved acceptable in the eyes of some of our dental organizations. As a consequence, when it was proposed that these Societies should send delegates to the Congress, some members thought that such action might be construed into an acceptance of, and agreement with, the position assumed, and the suggestions made, in the aforesaid circular. It became known that these points would probably influence the decision as to sending delegates, and, apparently with the view of explaining matters, the General Executive Committee addressed a "greeting" to the "British Dental Society," and the Odontological Society of Great Britain, disowning the "ill-digested circular" of the World's Auxiliary Congress, and, by means of a historical statement, endeavouring to show the relationship of the General Executive Committee to the World's Congress Auxiliary. This letter closed with the assurance of the signatories for the General Executive Committee, that it was their most earnest hope and desire that the respected bodies they were addressing would at once appoint delegates. In spite of this appeal, we believe that both the Societies have since determined not to be officially represented at the Congress, although doubtless some members will attend in their individual capacity. *The Dental Review* of Chicago regrets such action "more than words can express," and, somewhat inconsequently, proceeds in the next sentence to allude to "the opponents of the Dental Congress." Surely the fact that certain bodies do not choose to be officially represented, does not constitute the individual members "opponents," especially since, in the opinion of the writer, "the Managers of the Dental Congress have never asked any dental society to send delegates." But here comes in the question—Who are the Managers? We imagine that the remarks in the *Review* may be considered as inspired. At all events, the Editor's name appears as one of the Executive Committee, as well as being attached to the much-debated circular. It is, however, only fair to say that the explanatory letter also declares that although the names of the advisory Council were attached, yet the circular had never been read by the members of the Executive Committee. The Executive Committee write :—"We hope you will at once appoint delegates." The *Review* says :—"The Managers of the Dental Congress have never asked any dental society to send delegates, officially, they have invited the world of dentists."

We regret that there should once again arise the possibility of misunderstanding amongst international leaders of our profession. We trust some way of adjustment may be forthcoming. There may be strength in a multitude of councillors, but another adage also suggests itself, and the banquet at Chicago has apparently suffered from too many *chefs*.

DENTAL ADVERTISING IN ROME.—A correspondent sends us newspapers containing advertisements inserted, as he says, by some members of the Committee entrusted with the arrangements for the Odontological Section of the forthcoming International Medical Congress. Neither of the advertisements appears so bad as some we see at home ; there is no mention of doing better work for less money than anyone else, and one of them is not much more than a notice of change of address ; but they are quite bad enough. The following are translations :—" A Communication.—Rumours having been artfully circulated, the Public is informed that in the office of C. & Co., Surgeon Dentists, the profession is carried on with all the recent systems in dentistry, combining all perfections and progress known up to this day." "F.C—, Surgeon and Mechanical Dentist and his son P—, Doctor in Medicine and Surgery, specialist for diseases of the mouth and of the teeth, are to be found every day from 8 a.m. till 6 p.m. at their new dispensary No.— Piazza della S. and no longer at No.— close by on the same Piazza."

RUPTURE OF TONSILLAR ABSCESS CAUSING SUFFOCATION.—Mr. Gann describes a case in the *Lancet*, of a Creole woman suffering from quinsy. Briefly, the symptoms were a rigor, severe pain in the throat and under the angles of the jaw, great difficulty in swallowing, and sleeplessness. Neighbouring glands were enlarged, and the temperature was 105°, pulse, 118. The pillars of the fauces and soft palate were much swollen and of a deep purple colour, the left tonsil was swollen and injected whilst the right one was occupied by a large abscess. Shortly after the medical man had left to get a lancet to open the abscess, the woman raised herself, made a loud gurgling, choking noise, and fell back dead. Under these circumstances tracheotomy and artificial respiration were of course found to be of no avail, and a post-mortem examination showed a large abscess cavity in the right tonsil containing about one drachm of very thick offensive pus. The abscess had ruptured and the greater part of its contents almost filled the larynx with the same viscid offensive pus.

Formic Aldehyde.—This body closely resembles formic acid in its antiseptic properties, and the vapour of undiluted aldehyde absorbs oxygen from the air and produces the irritating fumes of formic acid. It is a clear liquid and readily mixes with water, is non-poisonous, and does not stain. Dr. Voitoff, of Moscow, draws the following conclusions with regard to formic acid :—1. It inhibits the development of the putrefactive microbes as well as destroying existing ones. 2. It is a more powerful germicide than carbolic acid. 3. Is a specific disinfectant and germicide, since, while destroying the culture it alters but little the nutritive medium. 4. Being volatile, it disinfects the air.

The Chicago Congress.—Those of our readers who may be thinking of making the journey may be glad of the following information. The American line (late Inman) although unable to offer any reduction on their lowest priced berths have offered special accommodation viz, better births on upper deck, £20 for £18, or £32 8. return, to members of the World's Columbian Dental Congress. Application should be made to Richardson, Spence & Co., 3 Cockspur Street, London. A large party including several from the continent, have already arranged to sail on the S.S. *New York*, on the 29th inst. from Southampton, giving a week to get to Chicago (about 1½ days' rail) and to see something of the Exhibition before the Congress opens.

The S.S. *Paris*, leaving Aug. 5th. will probably enable passengers to get to Chicago *late* on the first day of the Congress.

Duly accredited members of the profession attending the Congress are advised to secure rooms before arrrival in Chicago, which they can do by application to the Managing Committee Columbian Dental Club, 300 Michigan Avenue, Chicago, who will do their best to suit their requirements.

DEATHS UNDER CHLOROFORM.—Two cases have been reported lately in which the importance of watching the respiration was shown. In the first case, a man of thirty-five had a collection of pus in his left chest which communicated with the bronchus. It was decided to resect a rib, and empty and drain the pleural cavity. About a minute after the operation was commenced the respiration became impaired and soon afterwards stopped. About sixty or seventy ounces of pus were evacuated from the thorax, without relieving the symptoms, but after artificial respiration the patient took about ten deep natural breaths. The respiration again failed, and although kept up artificially with other measures for twenty minutes, there was no response. In the other case a woman was being operated upon for the relief of goitre, and some temporary respiratory irregularity occurred when the thyroid was dragged upon. Two or three minutes later the breathing grew rapid and deep and then stopped. Attempts to revive the patient were persisted in or three quarters of an hour, but without avail.

METHYL CHLORIDE.—Hertmann has published the details of 29 cases in which he used this drug for the relief of sciatica, intercostal neuralgia, lumbago, chronic rheumatism and nerve affections. The majority were absolutely cured or relieved, the number of sprayings in each patient averaging two to three. The whole of the affected area should be covered with the white powder which forms on the skin, and the author has never seen any more serious results than occasional blistering. In order to guard against gangrene this mode of treatment might be avoided in patients with albuminuria or glycosuria. The author thinks the spraying costs less in time and money than massage or faradisation, the iron cylinders in which the liquid is kept sufficing for from four to eight applications each.

IZAL.—Mr. Bruce Clarke has been trying the use of Izal in the treatment of wounds. The substance is a by-product obtained during the process of coke formation. It displays very remarkable disinfectant properties, is non-irritant, and has no poisonous effect on the higher animals even in concentrated solutions. From experiments made by Dr. Klein it appears that for destructive purposes a solution of 1 in 200 of the fluid is sufficient, whilst for inhibiting the growth of microbes 1 in 1000 will suffice. Besides being successfully used in other wounds it was found to have a good effect where the mucous membranes were concerned, and was tried with the greatest benefit as a mouth and throat wash after operations on those parts. Mr. Bruce Clarke has no hesitation in saying that this antiseptic seems likely to prove more efficacious practically than any at present known, although of course its behaviour under all circumstances must be more fully tested before its future place amongst antiseptics can be exactly fixed.

Abstracts of British & Foreign Journals.

MANUAL TRAINING A NECESSITY FOR THE FUTURE DENTIST.

By D. M. Cattell, D.D.S., Chicago.

The fact is, that those of the profession to-day, who began their studies of dentistry since the multiple number of colleges came into existence and the *seeming* necessity for studentship under a competent preceptor ceased to exist, are not so well trained in handicraft as are those who had a long apprenticeship under the older method of gaining the requisite knowledge. This is a fact recognised by the observing and earnest men. We have but few men in the profession to-day, that can wholly shape the medium difficult cavity, (to say nothing of the more difficult), with hand excavators alone. Neither can they insert a satisfactory tin, tin and gold, or noncohesive gold filling, as could our fathers in the profession in years gone by. Their hands were never trained to the work. They get over the point by claiming they see no advantage in the insertion of such fillings, or find no occasion for discarding the use of the engine in the preparation of cavities. Indeed, if such an expression may be allowed, *they expect the instrument to do the work rather than the hand.* It is true that a few of the schools are endeavouring to give the student a chance to acquire some hand training before he is ushered into the clinic room and turned loose upon unsuspecting humanity.

But the average young man, when he presents himself as a candidate for studentship, has had so little manual training, that he is like a mere child with his first box of tools. It has also been observed that those who presented themselves from the machine shops have acquired certain cunning of the hand beyond the farmer boy, and they soon show a dexterity that the college boy or former mercantile clerk or salesman can hardly hope to attain in his college days.

With these observations before us, we can but realize the necessity of greater effort toward training the hand to more delicate manipulation. It is a generally conceded fact that with the training of the hand the intellect is sharpened and quickened. *With the cuteness of the hand belongs the acuteness of the brain.* The higher grade of mechanics are necessarily the brighter men. As their handicraft developed and their finger skill increased the mind grew in stature and quickened in order to keep pace with the hand that led it.

Can a man build a bridge or fill a cavity with no other knowledge than that gained in the lecture room? Can he understand the theories, the propositions, the rules given in certain cases without first having had experience in finger manipulation in the construction of these things? Rather, after practical demonstration before him, and actual accomplishment of the deed, although imperfect, with his own hands, is he ready mentally to grasp ideas, understand theories and comprehend rules proposed by the lecturer. As the hand is trained, so the mind follows. "Manual training is only mind training." We who have watched the kindergarten children play, the method of their playing, the intelligence exhibited in the direction of their ways and means of entertaining themselves, and comparing these with the undirected unmethodical playing of the little ones lacking the opportunity to embrace the kindergarten system of instruction, can readily see the more intelligent joy, the more intense enjoyment of the one over the other—the enjoyment of being able *to do* is more consistent, more complete and more ethical than the simple pleasure of theorizing or *wishing we could do.* And in the higher enjoyment our minds expand, become more receptive, and intelligence is the result. We who have watched the growth and doings of the youths undergoing the methods of instruction in our so-called Manual Training Schools, and the practical application of both their hands and brains after the completion of such a course, know that they compare most favourably with the boys unable to follow such methods of instruction. Those who pass through and out of such schools are more ready to compete in the world's battles than he who is not so well fortified with both manual and mental training.

Lastly, we who have watched the development of the young men in our technical manual training departments of dental schools know, and know it positively, that their growth mentally is quickened, sharpened, broadened, and they are enabled to grasp, comprehend and more fully understand verbal explanation or instruction than are those who have not had the benefit of such manual training.

The Dental Review.

ON THE PROPER FITTING OF CLASPS SO AS TO PREVENT WEAR AND CARIES.

By W. G. A. Bonwill.

The metal should be of platinized gold only, without any lining of pure or twenty-two carat gold soldered on it next to the crown. The metal should be loosely fitted to the crown on the plaster cast and afterwards fitted in the mouth directly upon the tooth and made to touch in at least four places. It should not fit accurately every inequality of the surface. If a clasp fits minutely all the surface of the crown, it makes of the minute space between the crown and clasp a capillary surface, and keeps the mucous secretions, as well as the fine food, forever in contact and with no space for circulation of saliva. Whereas, if the band touches but a few places on the tooth crown, it will rest just as firmly if it has been well fitted in the mouth and allowed to take its own position when tried upon the crown. Capillary power made by surfaces very closely approximated is the surest means of producing caries. Where a space is left, the points that do touch are in absolute contact, and, aside from the slight wear on the tooth, the surface cannot decay as when there is an actual and close fitting. If made of pure soft gold, there would always be danger. The width of clasp should be as great as can be made, and to steady the plate without grasping it firmly. Next to the clasp in importance is to know where it should be soldered to the plate, and on which side of the crown to allow it to go on and off, where the crown is very much out of perpendicular. The gold amalgam does not discolor to any considerable extent. I prefer to allow the edge of the filling to stand outside of the clasp and not rest underneath it at the top or next the grinding-surface, and I do not hesitate to use the corundum wheel upon the enamel where slight projections interfere with a clasp resting securely. No harm can result where the cut surface is polished. If caries should occur at any point thereafter from accumulation of food, I should fill with amalgam. But this need not often result when cleansed after each meal.

Each case must be thoroughly studied after the plaster cast is made, or the result will not be satisfactory. The points on the clasp and plate where the plate is soldered to connect them *are the vital parts*, and, unless judiciously chosen and the bar made of platinized gold wire and the base plate of two pieces of gold soldered together to stiffen it, and the clasp of proper width and thickness, the strain placed upon the mechanism will break it. The bar holding the clasp and plate must always be upon the side of the tooth where there will be least resistance. Take a second inferior molar that has tipped forward very much and also inclines to the tongue. Here the soldering should be done as far back on the buccal side of the clasp as can be accomplished. Then the spring of the clasp is not needed for the buccal side, but for the anterior and lingual sides, where projecting from a perpendicular. If soldered from the lingual side, it would be impossible to get the clasp on or off.

In the upper cases it is generally the reverse, although there are many exceptions, and no rigid rules can be laid down. Each one must be specially studied, or no good results. Nor can you rely upon fitting plate and clasp to the plaster-cast and soldering from that. Take the trouble to take impression of both plate and clasp in the mouth, and then solder from that.

International Journal.

BRIDGE WORK.

By G. V. N. Relyea, L.D.S., Oswego, N.Y.

Over forty years ago I made bridges, which differed only from those made at present in the manner of their attachment to the roots. They were permanent, and, of course, had the same objectionable features of all bridge work, viz., uncleanliness, and I abandoned them. No refined, cultured or sensitive person can long endure the strong, fearful odour which is inevitable, I care not how well the fixture has been adjusted. There will be a lodgment which no brush or silk floss can reach, however dexterously or thoroughly used. No new departure (and we have had many) has been fraught with more dissatisfaction than this " new craze." Many, if not all, who were most enthusiastic at first, have long since abandoned it and some have pronounced their anathema *maranatha*. A dentist at Albany, who was a most sanguine advocate, now loses his temper if you only mention bridge work. Is it at all surprising, when some in their zeal, without wisdom, allowed their avarice to overrule their judgment, and build infirm, insecure foundations, which in a very short time gave way? Not only did they suffer in reputation, but those who had charged 15 dols. for the first tooth, and 10 dols. for each additional tooth, began to realize that it was not all gold that shone so bright at first, particularly when they had to make amends as best they could.

A serene, conservative, eminent dentist in New York said, at a large public gathering : " I have never put in any bridges, *but I have taken out a great many*," which, to say the least, was very significant. Dr. W. H. Thomson, of New York, had a patient who had been completely prostrated from having a bridge put in. The dentist had charged 1,750 dols. I asked the doctor what his bill was for attendance. He said, " Oh, my bill was only 300 dols."

My way of making bridge work on vulcanite may be illustrated by a case. A patient had lost the entire left half of the superior teeth, except the roots of the front incisor and eye-tooth, which I found in a fair condition. The other side was good, the second bicuspid only being absent. The patient could not pay for gold, and wanted only four teeth to correspond with the opposite side. I filed the stumps close to the gums; drilled into the roots about one-third of an inch ; put in tubes, with standards accurately fitted, allowing them to extend half an inch below the tubes, and the ends bent in the form of an L. An impression was then taken, the standards following the mould. The plaster was formed, and when separated, the standards were cut off, leaving only enough when flattened to catch in the rubber. Four teeth were selected ; a plate of wax only about one-fourth of an inch in width, and it was ready for the flask. Before packing, I placed a wire the full length of the intended plate close to the teeth, and vulcanized for one hour. The wire was brass, tempered. When ready, it went at once to its place. It was light ; the wire made it strong, and it could be removed at pleasure. I adopt this method sometimes for a single tooth, and I have inserted six and eight which have been worn for many years with great satisfaction. When the opening in the roots are funnel-shaped, fill around the tubes with amalgam.—*Dominion Dental Journal.*

EXTRACTING TEETH.

By John D. Thomas, D.D.S.

Notwithstanding the expedition and care with which the operation is performed, there are some conditions in which extracting a tooth not only fails to give immediate and effectual relief, but carries with it a certain amount of injury, which is deserving of more consideration than the profession at large has heretofore been inclined to give it.

The cases causing injury are those of exostosis, large and divergent roots, and malposed wisdom-teeth. Those which fail to give immediate and effectual relief are cases of pericementitis, incipient and alveolar abscess, and impacted wisdom-teeth in inflamed surroundings.

There is one other condition the treatment of which I have never seen described or recorded,—and that is severe facial neuralgia, which evidently starts from an inflamed pulp, continuing with no abatement after extracting the offending tooth. To me these cases were for a time most perplexing, for where reflex and neuralgic pain has existed from such a source it would seem that relief should be expected at once—almost to a certainty—after extraction ; and yet in some instances there will occur a continuance of pain as acute as before, which is liable to lead us to assume that the patient is suffering from neuralgia independent of the tooth or teeth. My first experience of this kind exhibited perfectly sound teeth, upper and lower, with the exception of the left lower wisdom, which had an inflamed pulp. The patient had never been subject to neuralgia in any form, so the extraction of the tooth was confidently expected to give immediate relief. What was my surprise to have him return the next day declaring that the pain was even more severe, if possible, than before. There was no inflammation about the parts, no putrescent matter in the socket, and the only explanation seemed to be that there might have been some disturbance to the inferior dental nerve, which was in close proximity to the root of the tooth at that point. In syringing the cavity and wiping out with cotton, there was a place which when touched excited pain as severe as an exposed pulp might do. I applied nitrate of silver, and he had no further trouble with it.

Dr. Kirk described to me a similar case in his practice. The patient, a lady, had suffered severe neuralgia for some time, complicated with a catarrhal discharge from the ears and partial deafness, both of which were coincident with the neuralgia, and for which it seemed impossible to discover a cause from appearances in the oral cavity. Finally, he concluded, there must be exostosis at the roots of the lower wisdom-teeth, and, though an experiment, their extraction was recommended, the superior wisdom-teeth being absent. The operation proved the correctness of the diagnosis as to the exostosis, for both teeth presented roots greatly enlarged, and relief was confidently hoped for. In teeth of this character, however, the strain necessary for their removal is apt to excite more or less inflammation, and the pain continued with increased severity for forty-eight hours. During the paroxysm he applied a minute quantity of strong carbolic acid directly to the bottom of the sockets, and the neuralgia instantly disappeared, never to return.

To satisfy myself as to the proper diagnosis of such cases, with a number of similar ones I split the tooth to see if we could discover more fully the true condition of the pulp. In three instances I have found a portion of the pulp broken from one-sixteenth to one-eighth of an inch within the canal, which had evidently pulled through the apex and remained in the socket, causing this after-pain. Even when there is no evidence of a portion of the pulp remaining, there is no doubt of irritation at the point of union between the tooth and maxillary nerve, sufficient to produce a continuance of the original affection. I have found the application of the silver nitrate effectual in all these cases.

Dental Cosmos.

ABOUT OXY-PHOSPHATE.

There are two ways of making large oxyphosphate fillings permanent, more permanent and better than large amalgam or gold filling. One is to almost fill the cavity with the oxyphosphate, and then, while it is soft, press into and overlay its surface with small pieces of soft alloy or of crystal gold. After a few minutes, when the cement is sufficiently hard, finish the filling by adding a little more metal and condense. If the cement is allowed to harden first a small portion has to be cut away, then the metal added, the first part being worked into pits or grooves made in the cement.

Another way is to cut and bend a thin piece of gold plate to fit the surface of the cavity. The pattern can be obtained by pressing on the surface a piece of lead or tin foil. A pin from an old tooth, or a strip of the gold bent V shape can be soldered on the under side. When the cavity is quite filled with cement, and still soft, press the plate on to it so that the pin or V attachment will sink into the cement, and the plate be on a level with the surface of the tooth.

The advantage of a filling of oxyphosphate covered in either of these ways is that by the cement sticking to the walls it makes a perfect filling, and thus protected the cement will not deteriorate.

Items of Interest.

A GOOD START IN EDUCATION.

We venture to say, as modestly as possible, that we believe we started better, in the education reforms in dentistry in Canada, than our brethren over the lines—not only in the matter of the matriculation examination, which is much ahead of that demanded by our sister colleges in the United States, but in the exaction of the indentureship system (in Ontario, of three full years ; in Quebec, of four years); the application exclusively to laboratory work during the first year, and during the interval of the college work : and the obligation to take anatomy (theoretical and practical), physiology and chemistry, at or under the jurisdiction of a well-equipped medical university.

The average dental student has not been, heretofore, an educated youth. A number have been promoted from the door-bell to the laboratory, and from there to the surgery, regardless of the most elementary education. For the future this is utterly impossible ; and experience proves it wise, in spite of the prediction that a genius will yet arise who can neither read nor write. A high standard of matriculation ; a good part of the studentship exclusively devoted to mechanical work in the laboratory ; as thorough a foundation as possible of anatomy, physiology, chemistry, and more—is the surest hope for the future *personnel* of the profession.

Dominion Dental Journal.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, held June 5th, 1893. Mr. W. B. Macleod, L.D.S. Edin. President, in the chair.

The minutes of the previous meeting were read and confirmed.

Messrs. T. Herbert Clarence and A. Curling Hope signed the obligation book, and were formally admitted to membership by the President.

The President announced that he had received obligation forms duly signed, from the following gentlemen :—Messrs. James Stewart Durward ; Arthur Hopewell Smith ; James Stewart.

The Librarian reported the receipt of "The Official Year-Book of Learned Societies, 1893," and "The Hawks and Owls of the United States in their Relation to Agriculture," from the United States Department of Agriculture.

The President then read notes on "A Case of Replantation" which we publish on page 625.

The **PRESIDENT** also exhibited a case of cemental union between a second molar and a wisdom tooth extracted by Mr. Robb, of Dundee, from the mouth of a gentleman who had come to him suffering great pain, due to inflammation of the socket. Mr. Robb said he looked round the mouth to see if there was any other abnormality or malformation, but all that he noticed was that the man had a club foot.

Mr. **RUSHTON** showed some specimens of cemental union lent for the purpose by Mr. H. W. Dewes.

Mr. **STOCKEN** asked the strength of the solution ot perchloride of mercury used in the case of transplantation.

The **PRESIDENT** said it was about 1 in 2000.

Mr. **STOCKEN** thought it must necessarily be very weak because perchloride of mercury combined with albumen and gelatine. The question arose as to whether it was preferable to a carbolic acid solution. He had treated a case with carbolic acid, and after a period of eleven years the tooth was still firm and in good condition.

Mr. **STORER BENNETT** asked whether it was intended to be understood that the specimen exhibited was one of cemental union of two teeth that had never been separated ? He understood "cemental union" to mean two teeth that at one time had been separated, and had been united by cementum. If the specimen was examined with a magnifying glass he thought it would be evident that it was an odontome ; it was not a specimen of two teeth that had been separately developed and subsequently united by cementum, but there was an actual union by dentine and enamel. He did not know whether it was intended to imply that the teeth had been developed separately and then become united by cementum, or whether it was supposed that the union was due to fusion of dentine and enamel.

The PRESIDENT said he had not determined that point accurately.

NOTES ON A CASE OF ANTHRAX. BY MR. H. G. READ.

On Tuesday April 18, James Long, aged 16 years, was brought to me in the surgery at St. Bartholomew's Hospital, having a large œdematous swelling in front of his neck. In the middle line on the point of his chin immediately over the symphysis menti was a small yellow vesicle having an intensely red areola round it. On looking into his mouth I found that the right lower second molar was dead, the neighbouring gum being somewhat thickened and inflamed. This tooth I therefore extracted, considering it a possible though not probable cause of the neck trouble.

Having ascertained that the lad was engaged in stuffing chairs with horsehair, that he had quite recently experienced two rigors, and that his temperature was 103°, I decided that he was probably suffering from anthrax, and therefore transferred him to Mr. Weir, the house surgeon on duty, who admitted him to Henry ward, under Mr. Smith.

The dresser's note, taken late in the afternoon of same day, describes the seat of infection as consisting of a small black slough about two lines across, surrounded by a red though not very inflamed areola about a quarter of an inch in diameter. No vesicles could be made out, there was but little induration of the base of the pustule. He also describes the swelling in front of the patient's neck ; it had considerably increased since the morning.

The following day I visited the patient at about 9 a.m. He had passed a very bad night, his temperature being 104°.2, large doses of quinine failing to reduce it. The pustule had sed a little in size, and around a central dry black slough was what I believed to be the remains of a ring of tiny blisters, the outlines of two or three being more or less distinct. The patient was very ill indeed, but in spite of his critical condition suffered neither anxiety nor distress. This absence of apprehension has been noted as a feature of this disease. At 7 p.m. the sore on chin was removed by the knife and the subcutaneous tissue scraped with a Volkmann's spoon ; patient's temperature at operation was 104°.2. Subsequently patient passed a very good night. Twelve hours after the operation the temperature was 98°, a fall of 6°.2. He made a rapid recovery, being perfectly well by 23rd April.

Some secretion from the sore, on microscopic examination, aided by cultivation, failed to reveal any anthrax organisms, though large numbers of bacilli of various kinds abounded in it. A small quantity, however, taken from the tissue removed at the operation was injected into a guinea pig, causing its death some hours later, and its blood was found to be swarming with anthrax bacilli.

Mr. ROUGHTON said this case showed how important it was for those engaged in dentistry to have some knowledge of matters which did not directly concern the teeth. If that case had gone to any one less informed or less practised than Mr. Read, no doubt the nature of it might have been overlooked, and the boy might not have obtained proper treatment until the disease had became too far advanced for relief. He had a similar case under observation recently, in which a man was admitted to the Royal Free Hospital with a sore place on the side of the neck, a black looking place very similar to the condition Mr. Read had described. The case was not under his own care, but he subsequently saw it ; he scratched one of the vesicles, examined the serum which came from it, and found it loaded with what were no doubt anthrax bacilli. The man was in an almost comatose condition, and although the malignant pustule was excised within a very short time after his admission to the hospital he succumbed within a few hours. If the case previously described had been allowed to go on, the result would no doubt have been the same.

Mr. MATTHEWS read the paper which we publish on page 637.

Mr. ROUGHTON asked for information on one point. It appeared that although there was bony anchylosis of one temporo-maxillary joint, there was a certain amount of movement in the opposite joint, and the boy was able to slightly protrude the lower teeth beyond the upper teeth. He would like an explanation how that movement took place. He did not quite understand what views were put forward with regard to the etiology of the joint disease in this case.

Mr. Matthews said the movement was only apparent on the left side. In the effort he made to open his mouth a little movement could be detected in the articulation on the left side by feeling closely. He also was able slightly to move the lower teeth forward; the movement was very, very slight, but could still be detected. The freedom of movement still remaining on the left side was sufficient to allow a slight movement. It was very difficult when a case was three years old to get the particulars of the early history. There was certainly no ear trouble, and the case seemed to resolve itself into one of tooth trouble followed by alveolar inflammation.

A Note on Chloride of Ethyl.

By Mr. William Rushton.

As far as I am aware there is nothing original in the few remarks I am about to make, but I thought they might, perhaps be of some little service.

I consider the best form of tube is that of Bengue's with the screw cap. When the latter is screwed down, and the fluid kept in contact with it, there is no loss by evaporation. For this reason, and also for the reason that it is more generally useful than the straight nozzle, I prefer the bent nozzle, as by this means the drug can be kept in contact with the cap to the last drop. It is advisable not to have a nozzle with too large a bore, as in that case the supply is too plentiful, and the fluid runs about in an undesirable manner. Theoretically the supply and the evaporation should be exactly equal. A napkin placed behind the spot to be frozen and over the tongue prevents any excess from going down the throat. I prefer to hold the tube from eight to 12 inches from the point of application. Although the advertisements recommend it strongly for ordinary extractions, I find it of very little use except that it somewhat deadens the pain caused by the driving up of the forceps. For the extraction of stumps not too firmly adherent—as, for instance, the stumps left by the gradual decay of upper molars—it is very good. It is advisable to keep on spraying with the left hand while the right is engaged in extracting.

In making incisions in any part of the mouth it is excellent instance, cutting down a partially erupted wisdom tooth, lancing or drilling an abscess or cutting away overhanging gum. In driving up cap crowns it deadens the pain considerably.

It is in exposing pulps previous to devitalization that I have been most surprised and pleased with its action. It is advisable to remove as much carious dentine as possible before applying the spray. The first shock of cold causes slight pain, but that passes instantly and is the only pain felt; the pulp can be freely exposed by excavator or drill without causing any further suffering. With a *free* exposure, the subsequent application of arsenical dressing gives practically no discomfort.

As far as my experience goes, it is useless as an obtunder for sensitive dentine, as the spray is more painful than that which it is intended to relieve.

Dr. Radcliffe Crocker, in a letter to the *Lancet* of November 5th, 1892, gives a warning as regards its use. He used it for freezing a patch which he was about to scarify on the nose of a young lady. The freezing action was good, but "the patient turned pale, slightly livid, and stopped breathing, looking very like a person under nitrous oxide gas." He "certainly would not use it again to any part of the face when it was possible that the vapour could be inhaled." Of course, we do not know how long Dr. Crocker applied the spray, how much of the drug he used, how near he held the nozzle to the face, or how much, if any, found its way down the back of the nose to the throat, but I have used the spray pretty frequently for more than twelve months, and have never seen any of the disagreeable symptoms experienced by Dr. Crocker's patient. It however, behoves us to be careful.

DISCUSSION ON THE TREATMENT OF EMPYEMA OF THE ANTRUM.

Mr. W. R. ACKLAND said: I may as well at once confess, my object in opening this discussion is more to elicit information than to give it. The cases I have had are often so disheartening as regards results of treatment that I want rather to compare notes with my friends than pretend for one moment tooffer anything original.

In order to give you ample time for discussion, I will only give you a few notes on salient points. And though in the agenda I see the discussion is limited to treatment, a few other notes may lead us to discuss points of interest.

(1) As to the nature of the disease we are going to discuss: to us as dental surgeons it chiefly means empyema or suppuration in antrum, since malignant disease is beyond our sphere, and we no longer consider cystic (or hydrops antri) as primarily an antral affection.

(2) Cause may be either a tooth, and it is generally this; or a nasal affection, as polypus or ozœna.

(3) With regard to symptoms. Of course, pus from the nostril is the best recognised. Neuralgia I have seldom found, except when the antrum was distended, and *no* pus came from the nose.

(4) Diagnosis would rest on the presence of *pus*, chiefly if discharge existed: and Heath points out that the discharge in ozœna is not offensive to the patient, as in these cases the sense of smell is gone.

I have seen percussion of the palate advocated. I have tried it, but could not get any difference in sound on either side. Electric illumination I know nothing about, but should like information from some of the members present.

Treatment.—I noticed some years ago in the *British Medical Journal* a description of Meculicz's operation, which consisted in perforating the inferior meatus. I tried it in two cases, using a special drill in the dental engine, with unsatisfactory results. It offered no advantage, that I could find, over the better-known method. I generally perforate through the alveolus with an ordinary straight elevator, using a cork on it to prevent pushing too far. Then I fit a small vulcanite plate [shown] fastened to adjoining teeth and carrying a spur (not a tube), which projects into the hole and keeps it open. I give the patient a black vulcanite syringe, and instruct him to syringe two or three times a day. As to antiseptics, one finds that the antral, like other mucous membranes, gets accustomed to any one lotion, and we get best results by ringing the changes.

Directly the hole is bored I syringe repeatedly—for about ten minutes on end—with fairly hot water, in order to remove all collected matter from the possible divisions or pockets. Then I give the patient lot. acidi borici, trying next, perhaps (after three or four days), zinc chloride or zinc sulphate, grs. ij to ʒ, Condy, or phosphoric acid, 1 in 18 or 20. On one occasion, after months of syringing with various antiseptics, I finally cured a case with pot. chlor. solution, about 5 grs. to the ounce.

Mr. S. J. HUTCHINSON said these cases were of great interest. They generally took a very long time in recovery. He had lately met with a case in which some bone mischief was due to a polypus which had extended through the opening of the middle meatus, and some caries of the bone had kept up a constant secretion of pus. Very often such cases which they treated from a dental point of view might have a deeper seated origin than was at first suspected, and that might be the cause of their necessitating such a very long course of treatment. He was quite sure that in many of these cases there was a tiny spiculum of dead bone somewhere, either on the nasal side of the antrum or probably in the neighbourhood of the aperture which had been made communicating with the mouth. That was certainly one of the causes of pus in the antrum that should be looked for, and it was one which would often be found to keep up irritation when no other trouble could be discerned.

Mr. STOCKEN mentioned that in two cases that came under his observation he had used chlorate of potash and a solution of iodine and iodide of potassium. Both cases proceeded successfully. He used a different mechanical contrivance to that mentioned by Mr. Ackland. He made a gold tube, of appropriate length, of a slightly conical form, with a broad gold flange, and round the outside of the tube soldered a gold spring wire. It had a spiral form, and there was no difficulty whatever without any other attachment in keeping it in its place. The patients were able to syringe through it as often as they pleased without any inconvenience. He thought that was better than a solid plug, because it allowed pus to escape where a solid plug would not do so.

Mr. READ said the hollow tube was a very difficult thing to keep clean. He had used the solid plug and found no inconvenience; it could be easily removed and replaced. He preferred a conical stem with a cap at the end. One case of diseased antrum which was somewhat difficult to treat, did very well with a packing of iodoform gauze, changed two or three times a week. After a time the discharge ceased, the packing was discontinued, and the patient made a good recovery. He suggested the use of a two-way syringe for washing out the antrum. Mr. Ewbank used sometimes a piece of gold spiral spring for the tube and when the opening into the antrum was tortuous it seemed to be a useful plan to bear in mind.

Mr BOYD WALLIS suggested the use of the electric light in order to ascertain whether there was accumulation of matter in antral disease. It would enable the detection of any thinning of bone and show whether pus was present.

Mr. **Storer Bennett** said he had placed on the table a arge collection of sections of upper jaws,presented many years ago by Mr. Cattlin, showing how many cases were met with having little pockets and processes of bone dividing the floor of the antrum into a number of sacs. This helped them to understand many of the difficulties met with in treating these cases, it being often extremely difficult to thoroughly wash out the different pockets. Either inspissated pus or foreign bodies, or pus itself, might collect in the little loculi; the syringe got at one portion of the cavity only, the other parts were never cleared out at all. In some of the specimens the floor of the antrum was divided into three different spaces. A similar plate to that exhibited by Mr. Ackland had been used in the Dental Hospital for some years. It was quickly made, inexpensive and served its purpose admirably. As soon as the floor of the antrum was closed over, the plate could be shortened to the required length and finally abandoned. It was also very useful in keeping patent sinuses leading into parts other than the antrum. With regard to the solutions used for syringing, it was, no doubt, necessary to ring the changes. Like all other mucous membranes, that of the antrum became rapidly tolerant of any drug, and therefore, it was not difficult to understand why, after using strong chloride or sulphate of zinc for a time, chlorate of potash had to be used, and, finally a weak solution of anything, so long as it kept the part clean, would be all that was necessary.

Mr. G. **Cunningham** said that apart even from the bony divisions the folds of the mucous membrane ran up and left very distinct and large pockets. With regard to the point raised some three years ago by Dr. Semon as to the increasing frequency of this antrum disease, since receiving notice of that meeting he had met with a case which came before him in a very curious way. The man had been treated in a hospital for broken jaw. He described himself as having been troubled with neuralgia nearly all his life. After a severe attack of pain he consulted a dentist and had a tooth extracted, the roots of which were partially eaten away by abscess. Obtaining no relief, he consulted a second dentist, and having taken gas he was informed that he would have no further trouble, that a stump had been extracted, and there was no abscess. Finding himself much worse, he went to the local doctor, who told him his jaw had been damaged and that the stump had been left in. Several parts of the bone gradually came away. Subsequently the man came to him (Mr. Cunningham), and the stump was extracted. There was a distinct distention on one side of the face. The mouth was in a very neglected condition, but the only thing he could see was that there seemed to be a small root left in the molar region. This was easily removed, and by means of a probe an opening into the antrum was discovered. A large amount of pus exuded. The source of irritation, viz., thé molar root, being removed, the case rapidly recovered, there being no signs of any further pus formation. In these cases he advocated the use af a solution of saccharin in alcohol, that being the most efficient antiseptic where it could be used in large quantities without deleterious effect. The improved condition from its use was very marked, and meanwhile the man was free from pain. During the discussion on Dr. Semon's paper he had mentioned a case where the opening into the nose was entirely blocked. It was proposed to the patient that an opening should be made through the meatus, but he declined. It was interesting to know that that case had gone on very well, and the patient was justified in his refusal. The parts had, after a long and tedious treatment, healed up entirely, and there was no recurrence of the trouble.

Mr. W. **HERN** said it was important to differentiate between cases occurring as the result of mischief originating in the nose, and those which arose from the teeth, because on a correct diagnosis depended another point—whether the antrum should be opened, and where it should be opened. There were two varieties of the disease; one obstructive, in which there was an empyema, and, as a rule, acute inflammatory symptoms; and the other, a non-inflammatory chronic condition, where the symptoms were more obscure, and the diagnosis was arrived at by a process of exclusion as well as by ascertaining certain facts, one especially of periodic discharge of matter down the nose or on the soft palate in the morning. The point as to whether the mischief arose from the nose or teeth was very important, because if it arose from the nose the question arose as to whether they were to sacrifice a good tooth or to open the antrum, which did not lead always to sacrificing a tooth. It would be conceded that if the mischief was due to a tooth, that tooth should be removed and the antrum opened through the socket. If the mischief arose in the region of the nose, then it was a question whether the antrum should not be opened without sacrificing a tooth, and what was the best position for so doing. In Dr. Semon's paper it was suggested to open up the cavity from the canine fossa. There was one point on which the after treatment depended, namely, to get the opening in the most dependent position; but if it was made in the canine fossa it would be more difficult to carefully drain the antrum. For opening the antrum Mr. Ackland preferred the elevator. There were cases where something more than an elevator was necessary, and the dental engine armed with a special burr was one of the best modes of getting through hard bone in such cases. Mr. Heath was the first to point out that where the opening was patent into the nose, the patient could be taught to wash out the antrum without any syringe at all—by taking a large mouthful of water, putting pressure on it with the tongue, and driving it through the antrum. He had had one or two cases at the hospital where the patients could do that with great facility, and it made the after treatment very much more simple. As to the time when the openings should be allowed to close, he thought if there was no foreign body and no discharge, after the antrum had been kept fairly clean from pus for a week or ten days, the openings should be allowed to heal of their own accord.

Mr. ROUGHTON wished to know whether anyone present had ever seen the inside of an antrum which had been the seat of empyema, and if so, what the pathological condition was: without knowing that, they might as well try to treat some difficulty in the next room by squirting through the keyhole. In these cases there was discharge going on a long time through the socket of a tooth which had been extracted, but the condition of the mucous membrane inside the antrum was almost entirely unknown. If they could collect information from people who had seen the inside of the antrum in such cases, it would be of the very greatest value. It is quite possible that there were several different classes of cases of empyema. Of course there might be some arising from the nose and others from the mouth, but apart from that the condition of the antrum might vary largely. Sometimes there might simply be purulent inflammation of the mucous membrane itself; in other cases—owing to the existence of septa passing across the floor of the antrum, very largely increased in depth by the mucous membrane over the bone—the prevention of drainage might be quite sufficient to prolong a case indefinitely. Then again it was quite possible that some small piece of necrosed bone in the immediate neighbourhood of the socket of a tooth might be the cause, and they knew that in surgery as long as there was a piece of dead bone at the bottom of a sinus, so long would that sinus continue to discharge. It was quite possible also that some mucous cysts might suppurate, and keep up the trouble. In a case of empyema of the antrum which did not get well by syringing, it was the duty of the surgeon to adopt some more radical procedure. As soon as an opportunity arose he intended to operate in this way: to draw the cheek well back and divide the mucous membrane between the cheek and gum so as to expose the anterior wall of the antrum; then by means of a stout knife or any suitable instrument make a hole into the cavity, cutting along three sides of a small square and then breaking the bone, leaving it attached above by the muco-periosteum; then pass in a small electric light on the end of a handle and actually see what was the condition in the antrum. He had done the operation several times on the dead body, and the view obtained of the interior was perfect. Of course, on the living subject the operation would not be quite so easy, and hæmorrhage might obscure the view; but a stream of water keeping it washed out would show the condition of the mucous membrane, and there would then be some chance of treating the disease.

Mr. **Mummery** mentioned that in a case which had become chronic and lasted two years, he, with the assistance of a surgical friend, cut away the whole of the floor of the antrum so that they could pass their two fingers in and see the whole of it. They found dead bone on the inner wall, and by scraping away the dead bone the discharge stopped. Pus again collected and this was got rid of by scraping down very freely the inner wall of the antrum with a sharp spoon. Referring to Mr. Cunningham's statement as to the use of saccharin, he said saccharin by itself was not an antiseptic, but combined with benzoic acid it was a powerful antiseptic.

Mr. **Cunningham** said as a matter of fact it was combined with benzoic acid: but Professor Miller in his book described the antiseptic value of saccharin in alcoholic solution. That was a point that had better be cleared up by referring to the authority.

Mr. **Maggs** advocated the free opening of the antrum by means of a good-sized gimlet so that it could be washed out thoroughly and free drainage obtained. Mr. Ackland seemed to expect some pathognomonic symptoms. It was very rare to get pathognomic symptoms, and the one mentioned by Mr.

Hern—pus in the mouth on rising in the morning—was not always present. One liked to find it present, of course, but there were cases in which it did not occur. With regard to the electric light, he remembered a case which was reported in which it was stated that with the electric light it was impossible to make out any difference between the antrum walls on the two sides ; but notwithstanding that, the antrum on the suspected side was opened and pus was found in it. Later on, the cavity on the opposite side was opened and pus was also found present there. He thought that the operation described by Mr. Roughton was rather a formidable one, and supposed that it would only be resorted to when the usual methods of treatment had failed.

Mr. **ROUGHTON** said, of course he would not advise an operation such as he had described at once. It would only be for cases that had gone on for a very long time, showing that ordinary treatment would not cure them.

Mr. **ROBBINS** called attention to a case that was exhibited at a previous meeting by Mr. Newland-Pedley. In that case an operation was performed on the lines advised by Mr. Roughton, but to a larger extent, the trap door being cut clean away. It was a very chronic case, and had hitherto defied all treatment. A vulcanite flap was made attached to a denture, which acted as a trap door.

Mr. **ACKLAND** briefly replied, thanking those who had taken part in the discussion for their kind hints. He had found polypi keep up the discharge, and had treated one case in conjunction with a nasal specialist.

He thought that Mr. Stocken must use some plug in his tube to keep food out, and considered that the tube and plug must amount very much to the same thing as the solid plug which he (Mr. Ackland) used.

Mr. Ackland remembered an allusion to the operation described by Mr. Roughton in Heath's "Diseases of the Jaws," but considered it an operation only to be undertaken by the general surgeon.

The **PRESIDRNT** called attention to a paper read before the Edinburgh Odonto-Chirurgical Society in March last by Dr. MacBride, the nose specialist, in which he treated this subject from a surgical as well as a dental point of view. The discussion on that paper had followed very much the same lines as the present discussion.

After the usual vote of thanks to the authors of the communications, the meeting was adjourned to Nov. 6.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual monthly meeting was held on Tuesday, the 11th of April, 1893, at the Grand Hotel, Aytoun Street, Manchester. The President (Mr. P. Headridge) in the chair.

New Members.

The following gentlemen were balloted for and elected members of the Society, viz. :—

Mr. Wm. Kelly, L.D.S.I., of 94, Oxford Street, Manchester; Mr. Albert Mauriçe, L.D.S. Edin., of 11, St. John's Street, Chester; Mr. Thomas Hill Morrey, of Ashford House, Stamford Street, Ashton-under-Lyne.

Casual Communications.

Mr. **Whittaker** showed two small pieces of gold which had worked their way through the gum and cheek of a patient which had apparently come from a tooth which had been filled. There was no great degree of inflammation, nor did the patient experience any great amount of pain.

Mr. G. **Campion** asked whether there was any great sensitiveness in the tooth, any appearance of a fistula, or whether Mr. Whittaker had traced the track of the gold particles, and as to the time that had elapsed before they came through the cheek.

Mr. **Whittaker** said he believed the filling had been in about a couple of years. He could not trace its track. It had, however, travelled down between the anterior alveolar wall and the side of the jaw, and not through the bone of the jaw. There was very little inflammation.

Discussion on the Demonstrations performed at the last meeting.

In opening the discussion on the Demonstrations performed at the last meeting of the Society,

Mr. G. G. **Campion** said it was a pleasure to open a discussion on the admirable demonstrations which were performed at the last meeting. They presented several distinctly new points which would be of use to them as dentists in their work. He would refer first of all to the demonstration given by Mr. Harrison on "Root Filling," and "Contour Amalgam Filling." He thought in the first place they were all able to grasp Mr. Harrison's meaning much better through that gentleman throwing photographs showing his *modus operandi* on to a screen by means of the lantern. The principle part, so far as he (Mr. Campion) was concerned was the filling of the apex of the root with a small quantity of silk prior to the insertion of the root filling. Mr. Harrison claimed for his idea that they thus avoided pressing any of the filling through the apex of the root. They knew from the clinical history of cases that a considerable amount of periostitis could be produced by pushing, say a gutta-percha point through the apex of a root, which might cause the loss of the tooth later on. Mr. Harrison's process was new to him (Mr. Campion) and he had used it several times with success since the demonstration. Theoretically, however, it might be urged, that the conditions left by this method were undesirable; that the silk was an absorbent; that it would absorb moisture from the tissues, and might set up inflammation, but they knew from the clinical history of other cases that pulp canals might be left unfilled provided the pulp chamber was well filled. He himself thought that the use of the silk would be of practical benefit. Another desirable point in the demonstration was the use of dental alloy pins, passed up the canal and forced into the gutta-percha root filling. Mr. Harrison forced the pin into the gutta-percha with a hot instrument, which softened the gutta-percha and allowed the pin to penetrate, forming, when cold, an admirable anchor post for the retention and strengthening of a large contour filling. He (Mr. Campion) had also used this method in several instances with great satisfaction since the last meeting. He (Mr. Campion) felt somewhat sceptical as to the advantage of Mr. Harrison's method of using the amalgam without a matrix. Of the other demonstrations he (Mr. Campion) thought the most striking was the one given by Mr. Masters on the manufacture of diamond discs, it was exceedingly simple and practical, and they were indebted to him for bringing it forward.

Mr. HOOTON said that he was particularly struck with the neat way Mr. Sherratt fitted his crown. Personally, he did not use the model for stamping the caps, but the demonstration made him feel the want of it. In regard to Mr. Harrison he thought that gentleman would grant that in many cases they did not get the filoselle silk right up to the apex of the tooth, and in cases where space was left he (Mr. Hooton) did not think it was beneficial, as the serum might collect in the cavity. The objection to gutta-percha points seemed to be hat one could drive them right through the root. That objection however, could be overcome by slightly warming the gutta percha point, which enabled it to adopt itself to the most tortuous root canal. Mr. D. Headridge's models were, he thought particularly interesting.

Mr. W. **Headridge** said the practice of inserting silk into the nerve canal was known to him many years ago. It was used by the late Mr. Stewart, of Liverpool, the only difference being that the latter waxed the silk, with excellent results.

Mr. **Minshall** pointed out that Mr. Harrison himself said he waxed the silk he used. He (Mr. Minshall) had used waxed cotton wool, and inserted into the root canal by means of a bristle with good results. He mentioned a case in which he had gone clean through the apex of the tooth into the periosteum, but after stopping up the hole with gutta-percha had managed to fill the tooth successfully.

Mr. D. **Headridge** said he was inclined to question whether there was any absolute necessity to fill root canals. They knew that in the old days practitioners simply made the canal sweet with creosote or carbolic, and in the great majority of cases the teeth remained sound. Then again they had the statement of Mr. Tomes who filled a number of pulp canals with Iodoform and wax, and although some years after he found they were absolutely empty, the teeth remained comfortable. There were a great many dangers in root fillings and he questioned whether the advantages on the one hand outweighed the disadvantages on the other.

Mr. **Hooton**, interposing, suggested that Mr. D. Headridge should tabulate a large number of cases of root filling showing the advantages, or otherwise, of the different systems of root fillings. At present it was all generalisation.

The **President** said he had seen many dead teeth filled but never with more care than Mr. Harrison took. With respect to leaving any *debris* in the root canal that did not seem a wise course of procedure to him, seeing that the slightest amount of pressure might disturb the dead matter in the pulp canal. He himself preferred to get to the apex of the root, as he then knew that every particle of dead matter had been cleared away. He could not agree with contouring a bicuspid with amalgam. It was like going back to the dark ages of dentistry. It would have been better to have used gold, or a porcelain inlay.

Mr. **Hooton** then read his paper on "Some Forms of Alveolar Absorption," which we publish on page 628.

DISCUSSION.

Mr. D. **HEADRIDGE** said the cases mentioned by Mr. Hooton were certainly the most troublesome they had to deal with. Referring to his assertion that they often occurred in gouty persons, he (Mr. Headridge) had had several such cases, but in no case were the patients gouty, although there was generally a history of hereditary gout. The patients were ladies, generally full-blooded, and often with little capillary markings on the cheek. In such cases it seemed absolutely impossible to do any good to the teeth, no matter how carefully they were scaled and polished. With regard to general caries, it usually occurred in lower molars, very rarely in the uppers. In other cases they noticed that in the upper molars in people without any gouty history, the gums seemed slowly to recede without any inflammation, or without any other secondary cause, and there seemed nothing to prevent it. He had tried various remedies, such as fraying the gum with a small scalpel, but to no purpose. Then in cases of Pyorrhœa Alveolaris, where they had the continual formation of pus, and where they had the alveolar process quite absorbed away, he had tried for such cases nitrate of silver, and he must say, that after cleansing them in the usual way, putting a little nitrate of silver down inside the pocket, and trying to remove all the necrosed tissue and producing, if possible, a healthy granulated surface, they seemed to do very well.

Mr. **CAMPION** said he had to thank Mr. Hooton for giving them a paper upon what was called "Rigg's" disease, without so much as mentioning the name, and for calling attention to the many different diseases which were too often associated under one name. He (Mr. Campion) thought that Mr. Hooton implied in his paper that tartar, which was so often associated with these different forms of the disease, and which was usually termed the cause of the disease, was perhaps more often a secondary and not a primary cause. Then the amount of inflammation might in some cases add to the formation of tartar. Another point in Mr. Hooton's paper which interested him (Mr. Campion) was the reference to Mr. Bland Sutton's observations on captive animals. He (Mr. Campion) thought that Mr. Hooton's criticisms were justified. It seemed to him that the analogy which Mr. Sutton drew between those wild animals having Rickets, and adults, was not a true analogy. One point of a practical nature which he wished to draw their attention to was that of binding the teeth together with very fine gold wire, which could be woven about the teeth, in such a way as to afford them considerable support. With regard to drugs, that was a subject upon which each would have his own ideas. Personally, he had found peroxide of hydrogen of great service in these cases, but it had to be used frequently for some time. They were however dealing with a chronic disease, which could only be cured, if cured at all, with great difficulty.

The **President** said he thought the loosening of the teeth in some people was due to the violence with which they were used. The sockets were not strong enough to stand the strain. Another cause was the want of care in patients not properly cleansing their teeth. The use of nitrate of silver was an old method, but, he thought, was rather too severe. This drug played havoc with teeth where the gums had receded. He himself was very fond of using Iodine as a drug, and when he wanted to set up healthy action round a tooth, nothing was better than carbolic acid.

Mr. **Hooton**, having replied, the proceedings terminated with a vote of thanks to those who had given demonstrations, and to Mr. Hooton for his paper.

Dental News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

The following gentlemen passed at the last examination, and were admitted Licentiates in Dental Surgery :—

Austen, Leslie Gilmore, Charing-cross and Dental Hospitals.

Bates, Herbert Astley, Mason's College, and Dental Hospital, Birmingham.

Beverley, Edgar Adolph, Charing cross and National Dental Hospitals.

Butler, William Reginald, Guy's Hospital, Dental Department.

Fairbrother, Aubrey Harry Burne, Charing cross and Dental Hospitals.

Gillet, Richard William, Charing cross and Dental Hospitals.

Hall, Edward Caleb Joseph, Charing cross and Dental Hospitals.

Ham, Hadley Herefoot, Charing cross and Dental Hospitals.

Hope, Vacey Linnington, Charing cross and Dental Hospitals.

Keay, Colin, Guy's Hospital, Dental Department.

Lukyn, Herbert Edward, Charing cross and Dental Hospitals.

Lyne, William Henry, Guy's Hospital Dental Department.

Makepeace, Alfred Joseph, Guy's Hospital Dental Department.

Manton, G. Sidney Frederick, Guy's Hospital, Dental Department.

Morgan, Frederick John, Guy's Hospital and Dental Hospital.

Morley, Frank, St. George's and Dental Hospitals

Oram, Charles Henry, Guy's Hospital, Dental Department.

Pritchard, Francis Edwin, Guy's Hospital, Dental Department.

Saul, William Henry, Guy's Hospital, Dental Department.

Simmons, Thomas Pybus, Charing cross and Dental Hospitals.

Tomlinson, John William, Charing cross and Dental Hospitals.

Twenty-one candidates were referred back to their studies for six months and one for twelve months.

APPOINTMENTS.

Mr. J. Howard Mummery M.R.C.S., L.D.S. has been appointed a member of the Dental Board of Examiners, at the Royal College of Surgeons, England, *vice* S. J. Hutchinson, M.R.C.S., L.D.S., whose term of office had expired.

Sidney Spokes, M.R.C.S., L.D.S., appointed Dental Surgeon to University College Hospital, *vice* S. J. Hutchinson, M.R.C.S., L.D.S., resigned.

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SHOULD WE FILL PULP CANALS?*

By David Headridge, L.D.S., Eng.

Mr. President and Gentlemen,—You must excuse me if I take this opportunity to throw a stone into the placid waters of self-content, should that be the condition of mind in some "up to date" practitioners, with regard to the question prefixing this paper. It will be even well if they but settle down again into a firmer conviction that their individual mode of procedure is the best. Yet is the studious filling of pulp canals the most scientific or the most practical course to pursue; in fact is it necessary?

Although we may overlook such grave defects as the mere uncertainty involved in the operation, with the dire results in case of failure; the expenditure of time and trouble; and other considerations which may harass the dentist; is it from the patient's point of view a more satisfactory treatment than the leaving of the canals empty? For though the percentage of failures is small, and even some of these may be due to a too energetic preliminary treatment, it does not remove the question from our consideration. And when we take into account the diversity in form and number of the canals, the minuteness of many, especially toward the apex, and the awkward tortuosities in direction so frequently encountered, it is no wonder that few are sealed properly to the apex ; a condition laid down as being essential for success. And the marvel is not that there are failures, but that these failures are so few. More especially do some of these considerations appertain to the buccal canals of upper molars ; the anterior canals of lower molars ; those in upper 1st bicuspids ; and even sometimes lower incisors ; these I think are seldom filled completely without previous enlargement, and it is a question whether this enlarging does not do more harm than good. Now if these small canals or portions of canals imperfectly filled or not filled at all remain comfortable—and experience proves they do—why should not canals of larger calibre containing no more potent contents, do equally well with careful treatment. For there are not only the dangers of pushing septic matter, or the substance used for root filling through the apex ; in many cases starting an acute periodontitis now rendered so difficult to cure ; but we dispense with a canal at once easy of approach, giving speedy relief to a distended condition of the apical space, being ready open for drainage, and which has furthermore the advantage of leading directly to the very centre of the affected area, should an abscess supervene from causes independent of those involved in the treatment of the tooth; such as cold, or the local manifestation of the presence of certain toxic influences in the system, mechanical irritation, necrosis of the root, and the like. Considering these and other advantages, I was led into enquiring the reasons *why we fill pulp canals*? Now this is a question perhaps easy of solution to some, but I have not found it so, and to aid in its discussion I will point out a few of the methods of treating pulp canals, and then consider the theory of the pathological aspect of the question.

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* Read before the Manchester Odontological Society.

We are in dentistry led much by the experience of others, and it may undoubtedly be true that "practice precedes science" but let us not be empirical in our treatment, and in any case let us see that its *rationale* is sound. We must not therefore in answering this question talk glibly of "the morbific conditions" or "putrefactive changes" that may ensue, or say that "the accumulations of secretions in the canals will produce painful distension." Are these phantoms likely to follow scientific treatment? are they not more hallucinatory than real? No writer that I am aware of thoroughly thrashes the question out and it seems the more important therefore to demand our careful consideration.

Succeeding the days when the treatment of an exposed nerve was the simple and expeditious extraction of the tooth attempts were made at conservative treatment. A dressing of carbolic or creosote at the entrance to the canal, after syringing the cavity with warm water, sufficed for the treatment of its contents. Of course, there were some failures, perhaps from no previous attention being given to an alveolar abscess associated with the tooth,or the presence of a gas forming putrifying necrotic pulp,without a condition of sterilisation being effected, or the ultimate leakage of the filling allowed a fresh decomposition to go on: but the many cases of success justified a continuance of this practice. With the introduction of barbed broaches, dentists began cleaning out the contents of the canals, and filling the roots became "fashionable"; in such a manner, however, that it is naively recorded by a writer of the time, "abscesses unfortunately sooner or later follow," due either to over zeal or imperfect manipulation. Then a reaction was heralded, and many with more careful treatment again tried the system of leaving the canals empty, and perhaps though not so extensively adopted, this "prudent plan,"as it is called, has many advocates. If this was possible many years ago, how much more should we expect success now, with the powerful drugs whose properties have been ascertained, and the beautiful adaptability and delicacy of our instruments, with which to-day we can conduct our operations. This opinion I see endorsed by Dr. Blackstone, in America, and Dr. Schreier, in Vienna; who find the most satisfactory results to ensue by discarding the system of filling the canals and "relying on an utter annihilation of all micro-organisms.' It has even been attempted to dispense with the removal of the contents of the pulp canals, and using instead a dressing of arsenic with the object of preventing decomposition: a method introduced by Mr. Coleman, and one extensively practised by Dr. Herbst.

That there are no ill consequences following the leaving of the canals empty we have daily experience for not only do many operators use wool dipped into an antiseptic for root filling, which so used is not free from the possibility of absorbing any likely products in its neighbourhood; but do we not constantly find canals empty under various fillings, especially amalgam, or in the accidental delay in renewing a dressing, not to speak of the cases happily getting rarer, where treatment of the contents of the canals has been simply ignored, and when more by accident than design the teeth have fortunately remained comfortable till the loosening of the filling revealed the attention they had received. And again, do not the pulps in old age undergo atrophic changes till the whole is shrivelled away. Further we have death of the pulp following a blow, which if not sufficient to materially disorganize the socket, the tooth may remain comfortable for years till an entrance is gained by decay and putrefaction set up. We have also many cases of replanted teeth, with the dead pulps *in situ*, and the teeth comfortable. In this connection too we may notice the interesting observation of Mr. Tomes, with regard to canal fillings he had done with paraffin that "on opening some of these teeth after the lapse of a month or a year, the pulp canals were sometimes found to be sweet but empty."

Turning from the practical to the more theoretical aspect of the question, it behoves us to consider the dangers that are to be feared in treating pulp canals. Undoubtedly the most serious trouble is the supervention of severe inflammatory mischief with its train of conditions so serious to the life of the tooth. Now "fortunately," as Mr. Tomes puts it, "the balance of evidence seems to point to the great majority of inflammations at the end of roots being septic, that is to say being due to the introduction of poisonous ferments," an opinion clearly supported by Dr. Miller. The intensity of the inflammation will therefore bear a relation to the nature and quantity of the micro-organisms which may gain the apical tissue either by their individual extension thither, or by their expulsion from the canal due to the accumulation of gases produced by aërogenic organisms, or by being pushed through the apex mechanically; although it may be noted that even portions of decomposed pulp, if it contains no living organism, should they reach these deeper tissues, will only cause a slight inflammation dependent upon their mechanical or chemical irritation.

We come now to enquire into the life conditions of these pathological units which offer so much force against our treatment. It will be sufficient, however, for my present purpose, to say that they require certain factors for existence that they live in perpetual antagonism with one another, and even with their own products (ptomaines), and that they fail to grow in the presence of certain reagents, and can be by them destroyed. And in the case of the micro-organisms under consideration, they require a quantity of albuminous material on which to exist, or if this is scarce, they soon enter into the formation of spores. Now the most tangible hope in the case of root-filling is to leave these micro-organisms but little pabulum on which to proliferate; an object clearly obtainable by thorough sterilization. To obtain an independent opinion on these views, I wrote to Professor Delépine, who kindly replied as follows:—

"Dear Mr. Headridge,

"I have no special experience regarding the points which you mention in your letter, but considering the question from a general pathological point of view, I would say that very little harm would result from leaving the pulp cavity of a tooth unfilled after carefully removing all decaying matter, and preventing the access of fresh micro-organisms of putrefaction by perfectly sealing the cavity of decay. My reasons for saying so are the following:—

"The cavity which I suppose *would have been rendered perfectly aseptic* in most cases, would undoubtedly be filled up after a very short time with a fluid generally called serous, but more like the lymph found in peripheral lymphatic spaces. In this fluid a few blood corpuscles would probably be present. Owing to the stopping, the passage of fluid into the cavity would cease as soon as all the air would have been absorbed. The quantity of fluid would therefore be very small. The solid elements would separate or degenerate, and after a very short time nothing but a thin clear serous fluid would remain in the pulp cavity. This would be the case if no granulation tissue could make its way through the foramen, (and from what I know of the structure of teeth such an occurrence is a most unlikely thing. I mean the replacement of the pulp which has been removed, by granulation tissue). So long, therefore, as the entrance to the pulp canal was well sealed, there would not be much greater chance of septic changes taking place in that small cavity, than if it were furtherremoved from the surface of the body, and the contents of the pulp cavity would therefore not be a source of irritation.

"On the other hand, if it is supposed that a few germs have remained in the pulp cavity, and the cavity of decay being perfectly sealed, I believe that these germs even if anaërobic will not be a serious source of danger, for they would be under most unfavourable conditions for spreading further. For, 1st, the cavity of the tooth would necessarily have been treated with certain antiseptic substances, which if unable to destroy all organisms, would probably greatly diminish the vitality of those remaining. 2nd. The total absence of air, and the small amount of fluid not renewed by any circulating process, would be against a full development of these few, somewhat weakened germs. 3rd. Admitting they were able to resist some time, there would be very little chance of their multiplying to any great extent, and still less of their becoming diseminated through the system, unless they were able to find a way out of the pulp cavity through the dentinal tubules, which is most unlikely, as the conditions would be very different from those which occur in ordinary dental caries, and the germs would probably have died from want of nourishment. There would remain the probability of their gradually spreading through the soft tissues occuping the foramen, the few that might reach the surface in this way would probably be rapidly disposed of by phagocytes. The chief danger therefore in leaving the pulp canal empty, seems to me to be the impossibility of sealing permanently the cavity of decay, for if the stopping got at all loose, it is evident that if there was a cavity in the tooth filled with nutritious fluid instead of some non-nutrient stuff, decomposition would go on.

Excuse haste,
Yours very truly,
SHERIDAN DELEPINE."

Well, gentlemen, this is my evidence, and as I think it is quite possible to overcome the drawbacks mentioned in Professor Delépine's letter, I think it is sufficient in justifying trial in the direction of leaving the pulp canals empty, and it only remains to consider "How to treat the pulp canals" to have satisfactory results, but this with your permission we will reserve for another evening.

DIFFICULT EXTRACTIONS.*

By W. DOUGAN, L.D.S.I.

THE operation of removing teeth is one which is ordinarily performed with so little difficulty or danger that a short paper on it may not seem complimentary to the abilities of my audience; nevertheless at times difficulties present themselves, and it sometimes happens that the tooth proves the master of the operator.

Now while this may be quite usual or even excusable in any person not specially trained in dental surgery, to my mind it betokens the height of incompetence in a dentist to be beaten by any tooth under any circumstances.

Old Dr. John Snow, who was the first man to investigate the action of anæsthetics in a scientific manner, stated that every case for an operation was a case for an anæsthetic. If that was true some thirty years ago how much more must it be at the present time, when we have so greatly increased our knowledge of anæsthetics.

Although the extraction of a tooth is so common with us that we scarcely look upon it as an operation, the shock to the nervous system is very great, and in my opinion the use of an anæsthetic is always desirable, and not only is the patient saved considerable pain, but the operation is greatly simplified; in fact some of the difficulties in extracting teeth can only be overcome by using these agents. Especially is this so in the case of young children with the temporary teeth badly decayed, abscessed and a constant source of pain and irritation. Now I am not going to discuss the propriety of extracting any particular tooth ; suffice it to say for the purposes of this paper, that there are cases occurring frequently where I and many other dentists would extract temporary teeth. I never willingly extract a tooth for a nervous child without an anæsthetic, for the simple reason that when you once hurt a child you lose his confidence and greatly increase your difficulties on the next occasion. Now badly broken down teeth in the temporary set require considerable care in their removal, so that the operator may not damage the permanent teeth in close proximity. To operate with any comfort the child must be placed under an anæsthetic, and our choice is between chloroform and gas, ether not being admissable in the case of very young children; in many cases gas will do, but its effects are often too transient for thorough work in young children, because in so many cases when anæsthesia is complete, the little patient is seized with very decided opisthotonos, which by making him slide out of the chair considerably hinders the operation, as well as alarms the child's friends in a very disagreeable manner. For these reasons, and because I consider it quite as safe as gas in these cases as well as much more convenient, I am led to prefer chloroform for young children.

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* Read before the Manchester Odontological Society.

Again, in adult patients, cases present themselves where in consequence of inflammation about the roots of lower molars, the patient is unable to open his mouth. This difficulty can be readily overcome by placing him under the influence of either chloroform or ether, when with the muscles relaxed it is an easy matter to screw the mouth open, extract the tooth, and give immediate relief. This course is (to my mind) much preferable to sending the patient away until perhaps an abscess bursts externally and disfigures him for life.

For the extraction of imperfectly erupted lower wisdom teeth, badly broken down lower molars and bicuspids, the elevator is the most reliable instrument we have; of all the various and grotesque patterns of elevators which adorn the pages of our instrument catalogue, Thompson's pattern, as made by C. Ash & Sons, has in my hands proved the most efficient. The directions ordinarily given for using it, appear to me to be unsatisfactory, and by following them we do not gain all the advantages the instrument is capable of yielding. You are usually told to thrust the instrument into the socket and prize it up in a similar manner to that in which a navvy raises a stone with a crowbar so that the very point of the elevator in this method impinges on the root and the rounded back part of the blade on the fulcrum. As I use an elevator I introduce it much in the same way, pushing the blade of the instrument into the socket as far as it will go, and then by making the handle of the instrument describe a segment of a circle, and at the same time depressing it, one side of the blade impinges on the surface of the root and the other side rests on the fulcrum; thus the distance between the fulcrum and the root is much reduced, giving us three distinct advantages, viz., a great increase of power, less risk of breaking the instrument while the tooth escapes from its socket in a more vertical direction, and thus causing less injury to the surrounding tissues.

This description necessarily gives a very ina dequateidea of the way in which I perform this operation. In my experience evator is hardly ever required in the upper jaw; here lar process is much thinner and more yielding, so that forceps can be better thrust between the tooth and the socket, but one of the most effectual ways of removing very badly broken down stumps or the apex of a stump, from the upper jaw, and in some cases, though less often, from the lower jaw, is by a method to which I have given the name of "expression," and which so far as I know, has never before been described. The method is briefly this :—the gums and alveolar process about the apex of the root are pressed or pinched with with a suitable pair of forceps, so that the root is shot out as a pea might be expressed from its pod. This is an altogether different operation from the old and well-known one, of seizing the alveolar edges and tearing them away with the root, and which you will find described in all text books. In this operation of expression little damage is done to the tissues, in comparison to the end achieved. The upper bicuspid which I pass around, was broken in my own jaw during an attempt at extraction, and the apex which you see, was afterwards expressed by myself without difficulty and with very little damage to either gums or process.

The anæsthetics in general use at the present time are chloroform, ether and gas, and they all possess advantages peculiarly their own. Now I am not going to give you an elaborate disquisition on the merits, demerits and physiological effects of these drugs, but simply to place before you some of the reasons which lead me to prefer one or other of them and also to introduce to your notice a new ether inhaler. Gas is, of course, preferable in all short operations. Chloroform is generally considered better for very young or very old people; it is much pleasanter to inhale and causes usually much less sickness than ether.

Ether is generally considered safer, and some writers go so far as to say that chloroform should never be used in dental operations; there might be some foundation for this if the chloroform were given with the patient sitting upright, but I think no one ought to extract teeth under chloroform unless he can operate with the patient in the recumbent position.

Ether, by reason of its stimulating action on the heart, may perhaps be given with greater safety when the patient is sitting upright.

The most convenient and pleasant way known at the present time of putting a person under the influence of ether is to commence the inhalation with gas, and when he is partly anæsthetised to substitute an Ormsby's ether inhaler for the gas face-piece. With a view of simplifying and rendering more efficient this method I have designed the inhaler which you see, and which for combining gas and ether or ether and air acts most satisfactory.

The reservoir of the inhaler holds one-oz. by measure of ether, which can be admitted into the inhaler either a little at a time or all at once. The inhalation is commenced by the patient breathing gas alone and when he is sufficiently unconscious not to notice its pungency, the ether is turned on. The patient now breathes a mixture of gas and ether vapour until anæsthesia is complete, or when preferred, ether and air can be respired instead of gas and ether. It is advisable before commencing, to warm both inhaler and sponge so that the patient may get the ether hot, strong, and plenty of it at once. The inhaler can be reapplied as often as necessary, fresh air being admitted when necessary by turning the two-wayed stop-cock.

The *Medical Journal* claims that the possibility of secondary hæmorrhage is increased when carbolic acid has been used for the antiseptic solution in a wound. It acts on the clot, rendering it friable and liable to be washed away.

British Journal of Dental Science.

LONDON, AUGUST 1st, 1893.

THE STUDY OF ODONTOLOGY.

Sir William Flower in his recent address to the students of the London Dental Hospital, naturally alluded to the wider aspects of the study of Teeth, with which his name is so closely associated. Such a study, of course, includes not only the histology of the tooth tissues and their development, but also the different forms and modifications of teeth for function, as exemplified throughout the Vertebrate kingdom. But there is no disguising the fact that to many practical-minded, work-a-day, dentists, and to many students, the study of comparative odontology seems a matter to be relegated to those who have the time and inclination to undertake it as an intellectual recreation. In our last issue, indeed, we published the lament of an American professor who finds that some students are unable to see what even the physiological structure of a tooth has to do with filling a cavity, or making an artificial denture. The holders of such opinions must assuredly forget that the successful performance of the more modern dental operations depends largely upon the increased amount of knowledge, still accumulating, with regard to tooth structure and physiological environment. In addition, it may surely be argued that a practitioner cannot know too much of the special organs upon which his attention is so concentrated, and about which he may be expected to take an unlimited interest. Indeed, it is a matter for congratulation that the future generations of dentists will probably prove to be something more than mere tooth-fillers; and it is not unreasonable to expect that, being drawn from the same class of the community as the medical practitioner, and tested by the same preliminary examinations, some amount of scientific culture may help to secure a certain proportion of the social recognition awaiting the dentist of the time to come.

Without referring, more than in passing, to the aid which the investigations in Embryology render to the proper understanding of structure, we may point out that for those who wish to extend still further their knowledge of Odontology, the subject of Palæontology offers an interesting field; for in studying the former science it is not only to living forms that we must look. Palæontology affords us the opportunity of examining the teeth of animals previously existing and now extinct, and by comparing these with modern teeth we are able to understand the latter better. But if Odontology thus owes something to Palæontology, the debt is more than repaid when we remember that the teeth by their indestructibility are of very great value to the latter science.

Sir W. FLOWER alluded to the instances of extinct animals known almost entirely by their teeth, and Prof. BUSK many years ago, referred to the matter as recorded in the Proceedings of the Royal Society:—"Of all the hard parts of animals the teeth, more especially for palæontological purposes, undoubtedly afford the most constant and the most generally available characters. The characters afforded by the teeth are derived from their number, proportions (absolute and relative), and pattern. In many cases the pattern of the teeth must undoubtedly be taken into account, but in a very great number of cases it will be found that the number and proportions more particularly of the premolars and molars, are sufficient for the purpose of diagnosis, or, at any rate, that a knowledge of these particulars alone will reduce the necessity for further comparison within a small compass."

perhaps said enough to show that Odontology like other sciences cannot be studied alone, but demands an acquaintance with cognate branches. Who, for instance, can understand the process of calcification, the preparation and examination of microscopic sections, without some knowledge of chemistry and physics. It is true that in our own special department we have some well-known hard-working men in the field. The names of Messrs. TOMES, MUMMERY, and UNDERWOOD remind us at once that Englishmen have done something. They are supported by younger investigators, such as MR. HOPEWELL SMITH, but in order to keep pace with the numbers of Continental workers it is to be hoped that SIR W. FLOWER'S appeal to the younger members of the Profession will not have been made in vain.

FATAL CASE OF SNAKE BITE.—It is generally supposed that we are free from venomous snakes in this country, but a case has just been reported from Wales in which a boy of eleven years was fatally bitten by what was thought to be an adder. There were two distinct punctures, about one tenth of an inch apart on the middle phalanx of the right index finger. The respiratory and cardiac centres appear to have been rapidly and progressively affected, whilst the sensorium remained free. The hand and arm became swollen and discoloured and death occurred in about 30 hours. The question arises as to whether the fatal result was due to the toxic action of the specific virus itself or to poisoning of a ptomainous character. The bite was sucked immediately after its infliction.

WHOLESALE EXTRACTION OF TEETH.—*The Lancet* hears occasionally of the wholesale removal of teeth where the relief is imperfect, and the general health goes unheeded. In an annotation on the ethics of dentistry, it is suggested that there should be a consultation with the family attendant before artificial teeth are substituted without the gravest necessity. We are glad to think there seems a possibility of medical men interesting themselves more in this subject than has hitherto been the case. Some of them, perhaps, who may be anxious to hold more serious consultations upon dental treatment, will not only study the causes of tooth failure (which *The Lancet* thinks so very imperfectly understood) but also prepare themselves to appreciate the niceties of opinion as to the retention or sacrifice of teeth in instances of in-and-out bite, or other difficult cases, so that the relief may be perfect and more or less permanent. The extraction of sound teeth for regulating purposes, although not wholesale is sometimes a stumbling-block for apprehensive parents and the dentist will welcome the influential assistance of the medical adviser, especially when arguing the claims of "symmetrical extraction." Seriously speaking, however, medical practitioners have ample opportunities, without such extended studies, of doing good, and the routine examination of the dental arches which some now make in all cases of indigestion, is frequently found sufficient to warrant the prescription "Go and see the dentist."

ANÆSTHETICS.—The *Lancet* appointed a Commission to investigate the adminstration of anæsthetics from a clinical standpoint, and the results obtained have lately been published. They prove most interesting, but to dentists the list of fatalities under Nitrous Oxide will be most valuable. Considering the enormous number of cases in which this gas has been administered, it is extremely satisfactory to find there are only thirteen instances in which death has occurred, and even in these it is too much to say that the gas was the cause. Since the returns were made, there have been at least two other fatal cases. One was an accidental death from asphyxia, in the case of a dentist who administered the gas to himself. A more recent instance has occurred in

Yorkshire, where a very small quantity of nitrous oxide was given, and the administration stopped in consequence of something unusual being noticed in the breathing. There seems reason to think that the tongue fell back and closed the glottis.

The Mastodon.—According to a newspaper paragraph, the Mastodon is not extinct after all. A tribe of American Indians, rejoicing in the name of "the Stickeens," have described monsters browsing along a river in their hunting grounds by Forty-Mile Creek; and it is said that these animals exactly correspond with the description of the extinct mastodon. As the latter is, of course, only known by the bones and teeth, we presume the Indians have unclothed the skeletons of the animals referred to, in order to make their comparison. In the South Kensington Museum, however, there is a pictorial representation of a Deinotherium in the living state. It shows a prehensile proboscis which is very short when compared with that found in the elephant, the sole remaining representative of the Proboscidians. Altogether we should feel inclined to believe that the Indians may have given an exaggerated account of the tapir, which also possesses a proboscis.

Recurrent Sarcoma of Lower Jaw.—Mr. Snow records, in the *British Medical Journal* the case of a patient operated upon nearly seven years ago, at the age of 51. An epulis together with several teeth had been removed six months previously, but recurrence immediately took place and the disease was advancing rapidly. The whole body of the lower jaw was greatly thickened, the gum being ulcerated. In some respects the condition resembled epithelioma advancing from the floor of the mouth, but other symptoms, and the history, enabled a diagnosis of sarcoma to be made, and an operation was therefore considered justifiable. The mass was removed by a median incisor, the jaw being divided below the coronoid processes. The microscope showed a spindle-celled sarcoma without myeloid corpuscles. Rapid recovery followed, but for several months the saliva dribbled from the mouth, and a sponge apparatus had to be worn. A ridge then formed in the mucous membrane and obviated this unpleasantness. The patient was seen in good health a month ago.

PROPOSED AMALGAMATION OF MEDICAL DEFENCE SOCIETIES.—Doubtless some of our readers have received communications pointing out the advantages to be derived from belonging to Associations of medical and dental practitioners, formed for the purpose of mutual defence and support in professional life. The Medical Defence Union, and the London and Counties Medical Protection Society have both been in the field, independently of each other. The Council of the latter body have passed a resolution that it is desirable to amalgamate with the Medical Defence Union, to form one Society. This has been considered by the Union and there is to be a conference on the subject. From an outside point of view it would certainly seem of benefit that two societies working on much the same lines, for the same purposes, should combine their forces. Individual action could only be useful if it were thought necessary to maintain the spirit of emulation. In this case we believe amalgamation would tend to secure as members, many who still halt in doubt as to which body they should join.

PERSONAL IDENTIFICATION.—Mr. Francis Galton has shown that impressions of the finger pulps afford a very easy and definite means of identification. The skin is inked on a pad, and even when the marks are blurred or imperfect the general contour or pattern may be identified and determined with practical unanimity by different persons. When good impressions are taken and the details of the ridges of a single finger are minutely examined, it is possible to say with certainty whether a fresh impression taken years afterwards is that of the same finger, provided of course that the skin has not been destroyed. The Council of the British Association has called the attention of the Government to the anthropometric method used upon the Continent, and suggests it may be employed for the identification of habitual criminals and deserters. An interesting case has recently occurred in which an insurance company required evidence of the death of a Dr. Sloman who was accidentally drowned in Nebraska. The body was exhumed many months after burial, but decomposition prevented the ordinary identification. The doctors, however, made an exact description of all the marks on the teeth and all the fillings. This description was found to correspond exactly with the entries made in his book by the dentist who had attended to the deceased, and the identification was considered complete.

DEATH UNDER CHLOROFORM.—A fatal case where the A C.E. mixture was used, is medically reported from Southend. The patient, a nervous child of seven years, went under very well, and the operation had only lasted about ten minutes when the administrator who had his finger on the temporal artery noticed that the pulse suddenly ceased without any previous flickering. The respiration continued for quite half a minute. Inversion, artificial respiration, and subcutaneous injection of whiskey were tried without success. The total quantity of the anæsthetic mixture used was about two drachms.

Reviews.

Tooth Extraction. A Manual on the Proper Mode of Extracting Teeth, By John Gorham, M.R.C.S. Fourth Edition. London. H. K. Lewis, 1893.

This little book of forty pages will probably meet with more favourable criticism in other than dental Journals. It contains tables of the eruption of the temporary and permanent teeth, and dental formulæ designed to show what teeth may be expected to be present in the mouth during any stage of the second dentition. Even if they are not there, the formula will show what ought to have been there. But we miss a short description of the appearances presented by the temporary teeth, and how they differ from the permanent ones. Such a method would, we think, materially assist those who may be supposed to find a difficulty in differentiating between the members of the two series. The author appears to think that a blunt gum-lancet, an old tooth-key, and a pair of rusty forceps are the "tools" still frequently employed for extraction. "If the more respectable members of the community, then, are not exactly *en rapport* with such instruments, it can hardly create surprise; and if they choose a dentist to extract their teeth, who is to blame?" Who, indeed? Certainly not the dentist, especially as he may be able to suggest other modes of treatment. The author thinks the use of the key should be the exception, not the rule, and should be restricted chiefly to the molars of either jaw, which are so decayed on one side as to prohibit their being seized by the forceps. "By fixing the claw on the sound side of the tooth, it will, in most instances, be removed more easily by the tooth-key than by any other instrument whatever." A few pages further on we read that in connection with such cases, the gum-lancet will be found of essential service in denuding the sound side of the molar preparatory to fixing the claw of the key. "A deep incision, so as to expose as much as possible of the sound part of the tooth, should be made, when the claw will find a hold, which would otherwise prove impracticable." It appears to us that this incision cannot be deeper than the thickness of the gum-margin, unless, indeed, the alveolus itself is to yield before the lancet.

The opinion is expressed that lower molars are now generally drawn with forceps having their blades opening laterally, although it is admitted that the Hawksbill "is a most valuable instrument and may be applied at the discretion of the operator." Our experience goes to show that the present generation of students at the Schools is being taught to rely upon the Hawksbill and the Elevator. The positions assumed by the operator when using the former instrument are not, however, those recommended in the present work. With regard to the wisdom teeth, in the text the elevator is allowed for the removal of the upper third molars, but is not referred to when the lower ones are dealt with. We need scarcely remind gentlemen visiting the hall on the Thames Embankment not to agree with this, and we are glad to find in the table at the end of our author's book that the arrangement is reversed.

The subject of Anæsthetics is dealt within two short pages. On the first it is stated that cocaine "seems destined to become generally useful." On the next we read that the trials made with it "have not stood the test of impartial enquiry." Ether apparently does not merit notice, the author stating that "the two anæsthetics in general use are chloroform and nitrous oxide gas."

The remarks on Lever Forces and their application to the operation of Extraction are, for us, the most interesting in the book.

Kelly's Directory of Chemists and Druggists. Seventh Edition. London: Kelly & Co., 1893.

This Directory furnishes other information than the title might lead one to expect, and is useful to us inasmuch as a list of dentists is to be found under the heading of the different places in England, Scotland and Wales, and most of the principal towns in Ireland. The official list as given in the Dentists' Register is arranged only in alphabetical order; and without such a work as that before us it is a matter of difficulty to find the number and names of the dentists in any particular locality.

Abstracts of British & Foreign Journals.

THE "LANCET" COMMISSION ON ANÆSTHETICS.

Nitrous Oxide.—The reports of some thirteen cases of deaths have been recorded, but as an examination of the cases themselves will show, it is very doubtful whether these fatalities can be ascribed to the influence of this anæsthetic. The youngest patient was 10 and the oldest 71. Most deaths have taken place in private practice, and records have come from Canada, France, England, Scotland, and the United States.

The pulse is stated to have failed before respiration in one case and once simultaneously with it.

In all cases the operation was for the extraction of teeth or stumps, and in three instances the operation had not been commenced at the time of administration.

Intemperance is stated in one case to have been a possible adjuvant cause: in another the patient was dying from cancer; in a third the case was complicated by vomiting.

The Causes of Death, as assigned by the reporters, were as follows: asphyxia; fright, the patient not being under the influence of the gas at all; congestion of the lungs, which was noticed two hours after the administration, and eventually proved fatal; the last stage of phthisis: respiratory failure through impaction (1) of a broken gag in larynx, (2) of a molar tooth in larynx; syncope (simple) in three cases, from incomplete anæsthesia and shock of tooth drawing, from tight lacing forcing the heart out of position by the distended stomach.

The measures adopted for Resuscitation, as far as recorded, were: artificial respiration, electric stimulation of phrenic by galvanic current, by faradaic current; prone position; stimulation by rubbing, slapping, cold affusions; drawing forward of tongue; tracheotomy.

Post-mortem examination of persons dying under nitrous oxide:

(1) Lungs tubercular—badly diseased.

(2) Heart fatty, atheromatous aorta, thickening of valves, right heart distended, left empty. Lungs engorged. Dark fluid blood between scalp and periosteum. Dura mater adherent, serous effusion into ventricles.

(3) Molar tooth impacted in larynx.

(4) Lungs and kidneys congested, adherent pleuræ, thickening of aortic valve.

(5) Fatty degeneration of heart.

DEATHS UNDER OR AFTER NITROUS OXIDE.

1. Male, adult. Extraction of teeth. After the extraction of the teeth the patient rapidly sank, and died in two hours. Congestion of lungs. Post-mortem: One lung diseased, other almost consumed by disease. Patient, it was presumed, died because lungs were in last stage of phthisis.

2. Adult. Extraction of teeth. No particulars given, except that it was stated that the patient was healthy.

3. Female, aged 17. Dental operation. After inhaling gas, was taken ill, although she did not take sufficient to produce insensibility. Died the following day. Was of strong and robust physical constitution and apparently in good health before inhaling gas.

4. Female, adult. Extraction of front tooth (loose). Patient inhaled gas three times in succession, each time taking but a small quantity, being equally fearful of the anæsthetic and of the pain of operation. Finally, choosing to submit to operation without gas, teeth were extracted. Immediately fainted, head dropping sideways. Face became livid, then purple. Battery and artificial respiration resorted to, but death took place in 13 minutes, face becoming blanched after death. Nervous shock from dread of pain and fear of fatal effects from inhaling gas. Verdict, at inquest, of jury composed of medical men, stated death to be due to asphyxia from inhaling gas; but not enough was inhaled to produce such a result. Post-mortem appearances: Conflicting evidence given—(1) one lung more engorged than the other but healthy. (2) One lung congested. (3) Lungs congested, right lung bound by old pleuritic adhesions. Upper lobes of right lung pneumonic.

5. Female. Dental operation. Post-mortem. Lungs in a state of asphyxia.

6. Female, aged 38. Extraction of tooth. Pulse said to have failed first. At beginning of administration patient's pulse rapid and less full. It was determined to operate without gas, but as patient could not bear the pain, gas again given. After operation face became livid and features began to swell. Though efforts were made to restore animation, she breathed only two or three times, and a few moments after her pulse ceased beating. Inhalation of nitrous oxide gas inducing

paralysis of respiration, though after the first administration there was rapid pulse with diminished volume. Cause of death said to be the impaction of a portion of a broken gag in the larynx. (For controversy on the cause of this death see THE LANCET, vol. i. 1873, pp. 212,245,253.) No post-mortem allowed. Believed to be of good health; of plethoric habit.

7. Dental operation. No particulars given.

8. Male. Removal of stumps of teeth for alveolar abscess. Pulse failed first. Operation commenced before complete anæsthesia was obtained, and patient begged several times for more gas, but seems never to have been completely under its influence. After operation, was observed to be very quiet. Cold water dashed over his face, and windows and doors thrown open. Face and neck livid, eyes fixed and open, pupils widely dilated. Hands cold and pale, but feet and legs quite warm. Cold affusions; artificial respiration: friction revulsions to feet and legs: galvanic battery, all unavailing. "Death from syncope" (verdict at inquest). Post-mortem: Dark fluid blood between scalp and periosteum; dura mater very adherent; membranes full of serous fluid, and veins intensely congested; ventricles filled with same fluid. Lungs dark coloured and congested. Heart enlarged, soft and friable; left side quite empty, right full of dark-fluid blood; deposit of fat in inter-ventricular furrows; aorta coated with atheromatous deposit; aortic and mitral valves thickened. Liver enlarged; in state of fatty degeneration. Patient was suffering from alveolar abscess caused by carious stumps, and could get no rest at night

9. Male, aged 10 or 11. Extraction of temporary teeth. Towards close of operation gag slipped, and mouth closed, patient became partly conscious, assuming natural colour, when he took deep inspiration, and immediately showed symptoms of asphyxia. Raising hand to neck, he attempted to tear away clothes as though they were loose. Laying patient flat, and slapping across the back were of no avail. Tooth could not be felt. Medical man fetched, who arrived in 7 minutes, but patient was then dead. Tracheotomy at once performed, without avail. Post-mortem: missing lower molar found firmly fixed in larynx with fangs uppermost.

10. Male, aged 57. Extraction of teeth. Extraction about to be begun, when patient seemed breathless—even lifeless. Tongue was drawn forward, water dashed on face, and artificial respiration begun and carried on for half an hour. Syncope. Post-mortem: Brain: dura mater firmly

adherent to calvarium. Heart: visceral pericardium presented few small whitish patches of fibrinous thickening. Valves normal, except soft, miliary, fibrinous vegetation on one of the aortic valves. No fatty degeneration. Lungs: right firmly bound to chest wall; lower lobe collapsed and atrophied; left large and slightly congested. Kidneys congested. Had a cancerous enlargement of tongue, which at post-mortem was found not to involve larynx. This patient was in a terribly shattered state of health at time of occurrence, the cancer having reduced him almost to a state of collapse.

11. Male. Dental operation. Nitrous oxide given without legal authority. Syncope was assigned as cause of death. The administrator was tried by 8th Chamber of Paris Tribunal for homicide, in causing the death of the patient, and fined 600 frs., and ordered to pay 3000 frs. damages.

12. Female, aged 71. Extraction of teeth, etc. The pulse and respiration failed together. At the commencement of the inhalation patient's respiration noticed to be inefficient. When patient became unconscious, and teeth had been removed, etc., she suddenly changed colour and became livid, while heart and respiration ceased. Syncope caused by impairment of respiration through tight lacing and over distension of stomach, both acting on a heart diseased and weakened by fear. Patient suffered from fatty degeneration, and was aware of it. She had breakfasted three hours before taking the gas, but digestion was wholly suspended by extreme terror at operation. Addicted to excessive tight lacing.

13. Male, aged 24. Extraction of tooth. As soon as tooth had been extracted patient gave a gasp and expired. Artificial respiration, with no effect. Syncope, due to incomplete anæsthesia. Heart and lungs examined previous to inhalation, and considered sound. The purity of the nitrous oxide was tested shortly after the accident.

UNTOWARD CASES.

We next pass to the reports of three "untoward" cases recorded as having occurred under the influence of nitrous oxide gas.

1. Female, aged 30. Extraction of tooth. After a few inspirations became unconscious; pulse ceased; breathing stopped. Pulling forward tongue; artificial respiration; breathing at length became normal.

2. Female, adult. Extraction of tooth. Acute and convulsive movement during narcotism, but recovered. Walked four hundred yards to station and was in the train when seized with faintness, pallor, and active convulsion. Was put to bed unconscious. Next day insensible, pupils widely dilated, pulse irregular and weak, breathing feeble. Was sometimes convulsed. Breath with peculiar fœtor ; odour of sulphur alcohol. Was treated as for hysteria ; recovery not perfect for several weeks.

3. Female. Removal of two molar teeth. Dentist who operated. Respiration failed first. Administrant noticed that patient (a little girl) was not breathing. Artificial respiration, which was successful in bringing patient round. At the critical moment administrator was too much occupied in operating to notice sudden stoppage of respiration. He thought that had he been operating unassisted, he would certainly have lost his patient.

SOME THOUGHTS UPON PYORRHEA ALVEOLARIS.

By W. C. Barrett, M.D., D.D.S., Buffalo, N.Y.

Within the realms of dental pathology, no single subject demands so much of scientific and intelligent observation as that condition which we call pyorrhea. The etiological problem which has vexed dentistry ever since it had an organised existence—that of the origin and cause of dental caries—has been practically solved. But concerning the next most common and destructive disease of the teeth, there is no intelligent and consistent theory that is accepted by any considerable proportion of dental pathologists. Those who do essay its cure are at work in the dark, and the remedies used are altogether empirical, while the great body of dentists do not attempt any radical remedial measures whatever, but assure patients that the disease is incurable, and stand idly by and philosophically witness the destruction of the organs which it is their duty to save. The author recognises at least three different phases of the disease, each perhaps having its own special etiology and distinctive symptoms, and each demanding treatment peculiar to itself.

GINGIVAL PYORRHEA.—The characteristic appearance of the first condition consists mainly of an inflammation of the margins of the gums, or a gingivitis, distinguished by the presence of pus and the breaking down of tissue, caused by a purely local irritant. It commences with a kind of stomatitis of a follicular character, and localized at the gum margins. This is not always the result of a lack of proper care of the teeth, but it may be a local manifestation of a general atony. The mucous follicles, which are numerous and somewhat specialized at the gum-margins, show degeneration in their function, and the condition of the secretion is materially changed, becoming irritating in its nature, and perhaps even excoriating. The gums are swollen and spongy, and are characterized in extreme cases by a kind of purple colour, almost akin to that of necrosis. They are exceedingly turgid, but preserve their glistening appearance. They are somewhat everted, and the edges, instead of the sharply defined margins against the tooth, are rounded and thick. The inflammation, having its origin in the gum-tissue, proceeds to the pericementum, and there is a wasting of that, nearly evenly about the tooth, with the consequent absorption of the edges of the alveolar walls. There is an effusion of plastic lymph at the point of inflammation of the pericementum, and this is broken down by the continued irritation and the septic condition which follows, and the result is an almost constant discharge of pus. Yet this flow, as well as the destruction of the pericementum and alveolus, is but secondary, and consequent upon the train of symptoms first described. There is little, if any, deposit about the necks of the teeth, and if it be present it is not a primary etiological factor, since the condition may exist and the teeth be entirely clear of any deposit whatever.

The etiology, while it may rest in a general atony, is not cachetic, but rather accidental. It begins with the follicular stomatitis referred to, and which produces an altered condition of the follicles and of their secretion, and this of itself becomes the local irritant which intensifies the state.

The pathology consists in the morbid change in the follicles, and the hyperæmic condition of the gums, with a great degree of œdema, or infiltration of the soft tisssues, a pouring out of plastic exudate and its infection and breaking down; all these in turn, by contiguity of tissue and by local irritation, producing an inflammation of the pericemental membrane, with osteitis and wasting of the edges of the alveolar walls. It is this condition which is so frequently mistaken for a worse one, and in my opinion this is the class of disturbances, marvellous cures of which are so often related in journals and at dental meetings, as the result of a few days of empirical medicament.

The treatment is simple and the prognosis always good. If there be a reduced tone of the system, tonics should be employed, with plenty of out-of-door exercise. The food should be generous, and every hygienic precaution should be used. Massage of the gums with the ball of the fingers, and by the frequent use of a rather soft brush, should be resorted to. Some form of mild cauterant may be applied at the margin of the gums, and ropes of cotton wet in it should be pressed down beneath them to the edge of the alveolus. Aromatic sulphuric acid is extremely useful in such cases, but a dilute solution of silver nitrate, or of carbolic acid, or of carbolate of caustic potassa, or of trichloracetic acid, are useful. Caustic pyrozone, a remedy that has lately come into use, is excellent in such instances. Some antiseptic mouth-wash should be employed, such as listerine, which may be used in full strength upon the brush, or diluted with five to ten parts of water as a mouth-wash or gargle. Some stimulating astringent may be employed as an occasional dressing, such as a solution of chloride of zinc, five to ten grains to an ounce. Of course general remedies are indicated if the condition be only a local manifestation of a general anæmia and malaise.

NODULAR PYORRHEA.—The second condition is marked by another train of symptoms, and its pathology varies from the first. The initial manifestation consists in the deposit upon the periphery of the root, at some point, of a hard, dark, closely adherent nodule of calcific matter. This may increase until the whole side of a tooth may become involved. As it characterizes the condition, it may be well to consider this deposit more particularly. It differs from the usual calculus found upon exposed portions of a tooth or dental plate, not only in colour and density and general appearance, but in locality. The usual tartar is from the saliva, and is precipitated, as is the lime which forms the coating on the inside of tea-kettles and boilers. The calcium is held in solution in the saliva by an acid, which in a healthy, normal condition it nearly neutralizes. Coming in contact with the carbon dioxide of the breath, a carbonate is formed, which is precipitated. But the chemical formula of the deposit which causes or accompanies the condition now described, is different. There is a larger percentage of phosphate, and a smaller of carbonate of calcium, than in ordinary deposits. Its origin is not from the saliva, and hence it cannot be called salivary calculus. Undoubtedly it must be derived in some way from the blood, and hence it has, by Dr. Ingersoll, been named sanguinary, and by Dr. Black, serumal calculus. It is not infrequently found near the apex of the root, even when there has been no apparent great pericementitis. It is sometimes entirely isolated from the gingivæ, and small nodules may be found upon teeth in which the gingival border of the alveolus is complete, with no opening to them from the cervical margins. This leads to the conclusion that the deposit of these nodules is the initial lesion, so far as the tooth and its investing tissues go. Another reason is that it does not usually commence when there is a considerable deposit of salivary calculus, which certainly would induce such a gingival irritation as Dr. Black believes to be the cause of it, although salivary calculus is likely to succeed its ravages. Dr. Barrett's own impression is that it is due to some special stimulation of the pericemental membrane, and that it is analogous in its origin to that condition to that called excementosis or hypercementosis, except that the deposit from the membrane is not in any sense organized, nor indeed is it the result of anything like true functional activity. But be that as it may, the deposit is peculiarly irritating in its nature, and when the accretion is sufficient in volume it induces a breaking down of tissue, a resorption of the alveolar walls, with a destruction of the pericementum until the cervical margin is reached, and thus a pocket is formed extending from the gingivæ to the extreme limit of the deposit. The etiology, then, of this form of pyorrhea would be an abnormal condition, whether general or local, of the pericementum of a tooth, that induces the lodgment upon the root of a peculiarly irritating deposit, the sanguinary or serumal calculus, and the mere local irritation of this produces the subsequent changes. The symptoms are, first soreness and perhaps elongation of the tooth, which are usually attributed to other causes, until the pocket is fully formed by the destruction of the pericementum and alveolar walls. The pocket becoming septic, and the deposits constantly increasing, there is a discharge of pus from it, with inflammation and turgidity of the gum, and pain of a sub-acute character that is more or less constant. Occasionally there is an exacerbation of all the symptoms, with the characteristic indications of a pus-gathering, which discharges and gives partial and temporary relief. The pathology has already been briefly sketched. It consists in the breaking down of the tissues under the continued irritation of the deposits, with their constantly increased accumulation, and the spread of the diseased condition until the whole socket is destroyed and the tooth falls out, when the irritating cause being removed, there is a cessation of the degeneration. The treatment consists in the removal of the calculi as a first step. This is usually quite difficult, from the close adherence of the deposits, and their density and hardness. If very much of the socket shall have been destroyed, so that the tooth is very loose, this will be found impossible, and the removal of the organ becomes a necessity. The operation demands delicate and peculiarly shaped instruments. Both the pulling and pushing movements will be found necessary. Sometimes a specially shaped cylindrical or pyramidal bur may be used to advantage. If the deposits can all be removed, there will probably be little difficulty in effecting a permanent cure. But to do this will entail the necessity for several visits on the part of the patient. After each operation the pockets should be carefully washed out, and they may be treated with aromatic sulphuric acid, this to be followed by a stimulating astringent. They should be douched with some antiseptic solution, such as mercuric chloride, permanganate of potassium, or antiseptic pyrozone, and should be carefully kept aseptic until the pocket has healed up with a deposit of new bone. If there is reason to suppose any real caries of the alveolus, the edges of the affected bone should be burred out to the limits of the deposit. During the course of this treatment, if the teeth are loose in their sockets, it is necessary to devise and insert some apparatus to hold them fast. It is folly to hope for any deposit of bone and reproduction of pericementum unless they are immovable, and much of the success of treatment will depend on this. It is surprising what rigidity may be given to very loose teeth by a ligature ingeniously applied. The prognosis depends upon the advance which the disease may have made before remedial measures were instituted.

CACHECTIC PYORRHEA. The third condition is the most serious of all. The first of those described in this paper is due to a local degeneration; the second to a local irritant depending upon some general disturbance. Both are exacerbated by the presence of micro-organisms. The third condition the author believes to have its origin in some constitutional dyscrasia, for it can readily be traced from parent to child. There is little doubt that it is infectious, and it seems probable that there may be some specific organism to which it may be due. Possibly the belief that it depends upon heredity may in some instances have been obtained from the fact that the child is apt to become infected from the parent. It attacks people at an earlier age than either of the preceding conditions, and, with comparative frequency, children of ten or twelve years. The initial point is in the peridental membrane. There is, as the primary lesion, an inflammation of the pericementum, producing an elongation and soreness of the tooth, and that, too, without any immediate threatening of loss of vitality. The other special symptoms, aside from the loosening of the tooth, are the characteristic red lines or blotches of pericementitis, with an irritable condition of the gingivæ and the discharge of pus from the sockets in the later stages. The pericementum dies in circumscribed locations, and the destruction of the alveolus follows through the consequent osteitis. Pockets may be formed about the tooth, but they will not be characteristic of the disease, as in the second condition described, nor will they be localized. The condition is not characterized by the formation of local deposits, as in the second condition, but the breaking down of the tissue is more general and the flow of pus more profuse. The whole of the pericementum of a tooth may seem affected, and the disease spreads from one tooth to another, until perhaps before the first one is entirely lost, every one, in the upper jaw especially, may have been attacked. In this third condition there is a distinct spread of the disease from one tooth to another in the same mouth. Furthermore, dentists may carry the infection from one mouth to another, through unclean instruments.

Dr. Barrett thinks there is a distinct element of heredity in this condition, for it can readily be traced through two or three generations. It might be urged that, as it is admittedly infectious, there is a possibility that it may be communicated instead of inherited, but there are many instances in which the parents have died some time before the appearance of the condition in the children, thus precluding the possibility of direct infection. There seems to be a distinct diathesis connected with it. What this may be is not yet definitely determined. The etiology, then, of this third state is probably constitutional, at least in the tendency to the affection. This may be aggravated by a lack of hygienic care, but even the most scrupulous attention to the teeth will not altogether prevent its recurrence.

The pathological changes consist in a degeneration of the pericemental membrane, and its melting down and final entire destruction, with the consequent resorption and wasting of the alveolar walls of the socket of the tooth, the presence of micro-organisms, and the evolution of pus. There is also another change that often accompanies this state, and that is a loss of position of the teeth. They become distorted, are inclined to separate from each other, and to fall outside the line of the arch. There is a spreading of the alveolus by what would appear to be an interstitial growth, until two teeth may be so far apart that it would be possible to insert another between them. The condition is never that of contraction of the arch, but seems to be a thrusting forward of certain of the teeth, causing a protrusion, or an elongation, or a lateral divergence, sometimes to an extreme degree. The prognosis is extremely unfavorable. Local remedies may retard the progress of the disease and subdue the acute symptoms, yet when relieved it is almost certain to return sooner or later, and even to hold it in check will require the most unremitting attention on the part of both patient and dentist. The treatment consists of mild cauterants, antiseptics, and local stimulants.

The Dental Cosmos.

TIC DOULOUREUX.

By Professor **Benedikt**, Vienna.

Though this affection is now generally admitted to be a central neurosis, it is yet capable of giving rise to important secondary changes in the periphery. Such are œdema and redness of the skin of the face, or cyanosis with tortuous small blood vessels. After the disease has persisted for a long time, we may find atrophy of the nerve trunks, and even considerable alterations in the carotid. With regard to treatment, galvanisation of the sympathetic, and galvanism and faradism applied to the seat of pain, are to be recommended. Compression of the carotid is not employed so often as it ought to be, but ligature of the vessel does not yield encouraging results.

These methods, however, often fail, and it is necessary to have recourse to operation. Resection of the nerve naturally suggests itself first; but curiously enough, cases are sometimes met with, where division of the nerve is not followed by the slightest degree of anæsthesia. The author had the opportunity of discovering the cause of this. In a patient who consulted him on account of a relapse, the infra-orbital canal had, in a previous operation, been completely obliterated. On the present occasion, the author, in dissecting out the infra-orbital nerve, found the canal and its exit quite closed; but a thick trunk stretched from the nose to this situation, forming a swelling from which the nerves radiated outwards towards the periphery. It was thus proved that in this disease there is an abnormal development of nerves, which are able to assume the function of normal nervous tissue.

The most important point in operating is to tear the central portion of the nerve as thoroughly as possible. Resection is not nearly so beneficial, although it produces temporary relief by cutting off the periphery from the centre. As to stretching of the nerve it is to be remarked that the less recent the case, the less good result can we expect, because the altered nerve will break when a comparatively slight strain is put upon it. A few weeks or months are sufficient to cause atrophy in an acute case, and, as the extent to which the development of new fibres has proceeded will also depend on the duration, it is manifest that this latter will greatly influence the prognosis. Our procedure should therefore be to use galvanism for 10 or 14 days. If this gives no relief, we should at once operate. Sometimes the pain persists for days or weeks after operation; it is then, as a rule, amenable to treatment by therapeutic measures which were at first powerless. Frequently the pain is quite gone when the patient awakes from the influence of the anæsthetic; in such cases, slight relapses yield to electricity. The author has never met with a case where operation completely failed.

Glasgow Medical Journal.

A PROCESS OF COLD SOLDERING.

It consists of two alloys, the one of metallic sodium and mercury, and the other of metallic copper and mercury, prepared and used as follows: The flux consists of of 1 part of sodium to 50 parts of mercury. This must be carefully protected from the atmosphere in a glass stoppered bottle. This has the property of amalgamating any metal with which it comes in contact, forming an adhesive amalgam even on cast iron. The solder proper is made as follows: Dissolve 10 ounces of sulphate of copper in 2 pints of water, and then precipitate the copper by the introduction of strips of zinc. Wash the precipitate in hot water two or three times, drain off, and for every ounce of precipitated copper add 2 ounces of mercury. Add also a little sulphuric acid (say 15 to 20 drops), to aid in the amalgamation of the metals. The finely divided copper and mercury form a paste which sets and becomes intensely hard in the course of a few hours. It should be made up, while soft, into little pellets and put away. When required for use, first amalgamate the surfaces to be joined by rubbing them lightly with the flux. This is the equivalent of tinning in the ordinary soldering method. Then take one or more of the pellets, and warm till the mercury begins to exude at the surface. Wipe off the exuded drops with a clean rag, and drop the pellets into a small mortar and rub till smooth, or about the consistency of prepared white lead. Smear this over one of the surfaces to be joined, and apply the other surface to the latter as quickly as possible. The joint sets so firmly in the course of two and a half to three hours, that only a hammer and cold chisel, or a degree of heat sufficient to melt ordinary solder, can separate the surfaces.

For an even stronger and much quicker setting solder, where expense is no item, take the following to replace the copper and mercury, using the same flux:

Silver	8 parts.
Tin	10 parts.
Bismuth	1 part.
Platinum	1 part.

Melt together, and cast an ingot. Rasp to filings, or other wise reduce to small particles. This sets in about fifteen minutes, and cannot be made workable again by heat; it must be mixed just as required. The omission of the platinum reduces the strength of the solder, and lengthens the time required to harden about one hour. The omission of bismuth makes a more granular mass, which is better for filling up crevices. With bismuth, it is as smooth and plastic as potter's clay. Joints made by this solder are almost inseparable. It is very valuable in repairing surgical and philosophical instruments, the brazing of delicate springs, and in all cases where the application of heat would be hurtful or destructive.

National Druggist.

INLAYS OF LOW-FUSING ENAMEL.

By Dr. Barlow.

Dr. Barlow only claims the utility of this method for the anterior teeth. The cavities that take most kindly to this operation are those of approximate surfaces, keeping away from the cutting edge. Opening into the cavity from the front face he takes No. 50 gold foil and presses it accurately into the bottom of the cavity, and takes a piece of cotton on the pliers and presses that into the cavity, relying on an accurate fit to the orifice of the cavity only. Then he follows with this low fusion enamel—Timme's—and melts over a common alcohol lamp. He then adapts it to the cavity, and sometimes it takes two or three fusions to get the proper contour. Deep undercuts should be avoided in the preparation. Then, after he gets this adapted accurately, he sets in cement sometimes. He prefers, however, the common white gutta percha to the cement, being tougher. Then he leaves a matrix of gold in there, and burnishes that down after he has pressed it into place. When he gets it all right to set, he makes some undercuts so as to add to the strength and anchorage of the enamel. Then when he gets that all right he heats the gutta-percha to such a consistency that it will press into place easily, and then burnishes the gold and all down on to the orifice of the cavity. This operation seems to merit a prominent place among the operations used in our profession, and for certain cavities where patients especially dislike the gold because it is unsightly, and in those cases where the enamel can be adapted in this way, it is a decided success. He uses Timme's enamel which he claims is not so strong a body as Allen's, but he places it where leverage does not come, where the teeth are not subjected to prying, and in the mouths of those persons who are careful in using their teeth.

The Dental Review.

A RAID ON A DENTIST'S SHOWCASE.

At the Greenwich Police Court, Samuel Wallage (21), flower-seller, of no fixed abode, was charged with being concerned with four other men not in custody, in breaking open a showcase in the front garden of 474, New Cross Road, and stealing one set and five pieces of artificial teeth, value £3, the property of Mr. Edward James Smith, dentist. P. C. Berry, 294 R, said that at about 2 o'clock that morning he was on duty in the New Cross Road, and saw the prisoner and four other men drive up in a trap and stop outside the prosecutor's house. The prisoner went into the front garden, and witness heard a smash of glass. The prisoner came into the road again, and, with the other men, moved off a little way and returned. Witness saw him put his hand four times inside the showcase, which contained false teeth. Witness ran up and caught the prisoner in the garden, and another constable found one set and five pieces of artificial teeth on the grass. Mr. Marsham remanded the prisoner for the police to try and find the other men alleged to have been with him.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF MANCHESTER.

The Annual Meeting of the above Society was held at the Grand Hotel, Aytoun Street, on Tuesday evening, the 2nd May, 1893. Mr. P. Headridge (the President) was in the chair.

Mr. David Headridge read a paper entitled "Should We fill Pulp Canals?" which is published on page 673.

The subject introduced by Mr. Headridge opening out such an important subject, it was agreed to defer the discussion to a further meeting.

ELECTION OF OFFICERS.

The election of officers for the ensuing Session was proceeded with, the following being elected:—

President—Thomas Murphy.

Vice-Presidents—Peter Headridge.

Treasurer—Henry Planck.

Secretaries—P. A. Linnell, (Council); F. W. Minshall, (Society).

Librarian—W. A. Hooton.

Editor of Transactions—William Simms.

Members of the Council—G. O. Whittaker, E. Houghton, Wm. Dougan, I. Renshaw, L. Dreschfeld, E. P. Collett.

ALTERATION OF LAW.

It was resolved that the following alteration be made in Law 27:—

The Law instead of reading

"Any Member whose Subscription shall be more than three months in arrear, shall be reminded by letter by the Hon. Treasurer that it is due. If not paid within twelve months from the time it is due, the default shall be reported by the Hon. Treasurer to the Society; and, after the expiration of a further period of three months, if the Subscription be not paid, the Council shall be empowered to remove the name of the defaulting Member from the Roll Book, and he shall thereby cease to be a Member of the Society."

shall read :

"Any Member whose Subscription shall be more than three months in arrear, shall be reminded by letter by the Hon. Treasurer that it is due. If not paid within twelve months from the time it is due, the Council shall be empowered to remove the name of the defaulting Member from the Roll Book, and he shall thereby cease to be a Member of the Society."

TREASURER'S BALANCE SHEET.

The Treasurer submitted the Annual Balance Sheet, which showed a balance in hand of £40 7 8.

PRESIDENT'S VALEDICTORY ADDRESS.

The retiring President delivered a short Address, thanking the members for the support they had given to him during his year of office, and especially thanking the Secretaries of the Society, upon whom the burden of the work chiefly fell.

The chair was then taken by the President-elect, Mr. T Murphy, who in a short Address spoke of the hesitation he had had in accepting the honourable position they had elected him to fill. It was no light task to follow the able Presidents of the past, especially in view of the growth, both in numbers and influence of the Society. It would be his aim during his year of office to so co-operate with the officers and members of the Society as to still further extend its usefulness.

VOTES OF THANKS.

On the motion of Mr. Simms and Mr. Dougan, the cordial thanks of the Society to the past President was carried with acclammation, and suitably responded to by Mr. P. Headridge.

On the motion of Mr. W. Headridge and Mr. Broughton, supported by Mr. Planck, a resolution of thanks was also accorded to the past officers.

TINCTURE OF IODINE, it is said, greatly facilitates the operation of cleansing children's teeth, having a wonderful and almost instantaneous effect on the dark stains, combining with latter, which are rendered so soft as to be easily remov ed

Dental News.

THE DENTAL HOSPITAL OF LONDON.

A conversazione, in connection with the Annual Distribution of Prizes, was held at the Royal Institute Galleries, Piccadilly, on the 14th ult.

Mr. Morton Smale, the Dean, said that in view of the evening's programme prepared for visitors, he did not intend to read a detailed report as usual. He alluded to the success of the School during the past twelve months, and to the entry of students, which had been unprecedented. With regard to the proposed new Hospital, the students had also done well, and altogether there were now promises of £9000.

Sir William Flower, F.R.S. then presented the prizes as follows :—

Saunder's Scholar—Mr. W. J. May.

Ashs' Prize (*Given by Messrs. Ash and Sons*)—Mr. W. J. May.

Certificate of Honour—Mr. W. W. Gabell.

Class Prizes, Winter Session, 1892-93.

Dental Mechanics.

1st Prize—Mr. W. W. Gabell.

2nd Prize—Mr. J. T. Hankey.

Certificates of Honour—Mr. W. J. May, Mr. A. B. Densham, Mr. M. Gosschalk.

Operating Prizes.

1st Prize—Mr. J. R. Freeman.

2nd Prize—Mr. W. J. May.

Certificates of Honour—Mr. A. B. Densham, Mr. W. F. Mellersh, Mr. W. W. Gabell.

Class Prizes, Summer Session, 1893.

Dental Anatomy.

1st Prize—Mr. J. Main Nicol.

2nd Prizes—Messrs. W. J. May, A. N. Sumerling.

Certificates of Honour—Messrs. W. A. Densham, N. G. Bennett. W. W. Gabell, H. Reeve, D. Dunlop.

Dental Surgery.

1st Prize—Mr. J. Main Nicol.

2nd Prize—Mr. E. Harrison.

Certificates of Honour—Messrs. A. B. Densham, A. N. Sumerling, J. R. Freeman.

Students' Society Prize—Mr. E. Mosely.

Sir William Flower in his address to the students, which followed the distribution of the prizes, referred mainly to the great changes which had taken place in the dental profession since he had first become acquainted with it as a student of medicine, more than forty years ago. Dentists had then no recognised position nor organisation of any kind. Since that time they had acquired a legally established and protected professional status. They had become associated with the various Colleges of Surgeons in the different divisions of the kingdom, under whose auspices strict examinations had been instituted, and an educational curriculum was required, without passing which no one could enter their ranks. For obtaining these advantages they owed much to the exertions of one of his oldest and most intimate friends, Sir John Tomes. They had now that valuable institution, both for the benefit of the suffering poor, and for the instruction of the student, the Dental Hospital, which he hoped would soon enter upon a fresh sphere of usefulness when the enlarged accommodation afforded by the new building that was in contemplation, was obtained. They had an admirably organised school, with a complete system of instruction, both theoretical and practical. They had also the Odontological Society, with its library, museum, and meetings for the interchange of ideas, and discussion of subjects pertaining to the advance of their profession, and its Journal for the dissemination of knowledge among its members.

Some of the great practical improvements that had taken place since the time that he, as an army surgeon, had had to practise dentistry with comparatively rude and inefficient appliances, were next alluded to, and finally the great advances in the scientific knowledge of all that relates to the structure and functions of the teeth generally were dwelt upon.

At the period first referred to, Owen's great work on Odontography, then recently published, exhausted the knowledge of the subject, but the researches of more recent times have vastly extended, and almost revolutionised it in some directions. The numerous discoveries of extinct animals have enabled us to trace the gradual modifications of tooth form from one species to another, from the most simple to the most complex, and the improved methods of research in microscopic anatomy have shown facts in tooth development which throw light upon the origin and history of many groups of animals which were previously obscure. It was to these subjects that he wished particularly to direct the attention of his younger hearers, as he thought that many of them might do much to advance the scientific knowledge of the subjects connected with their profession, without in the least prejudicing their practical work. On the contrary, nothing would tend so much to improve their powers of observation for daily details of ordinary life, and they would rise in general estimation as they became a learned and scientific, as well as a practical profession.

Mr. Christopher Heath in proposing a vote of thanks to Sir W. Flower, alluded to the excellent work which Sir William had done at the Royal College of Surgeons and South Kensington Natural History Museum, at both of which he had worthily followed Sir Richard Owen.

Dr. Hare seconded the vote of thanks, which was carried by acclamation.

Sir W. Flower briefly responded.

An excellent programme of music followed, to which Miss Elizabeth Fedarb, Signorina Carmela Meo, and the Meister Glee Singers contributed.

GUY'S HOSPITAL MEDICAL SCHOOL.

New laboratories and Dental School buildings were officially opened on the 17th ult., by Sir John Lubbock, M.P. The new block of buildings is thoroughly adapted for the purposes for which it will be used, and will afford scope for the development of practical, in addition to theoretical, teaching in the various subjects of medical education and dentistry. The formal opening ceremony was preceded by a luncheon, at which Mr. H. Hucks Gibbs occupied the chair. The chairman having spoken of the need of the extension and of the great prosperity which had attended the school, called upon Sir John Lubbock, who said that though it might perhaps be stated with strict accuracy that Guy's formed no integral part of the University of London, which he represented in Parliament, yet the ties between the University and the Hospital were close and intimate—they had common objects, duties and interests. Guy's had—the first of the great hospitals to do so—established a complete dental school. He could say with confidence both the laboratories and the school were worthy of that great hospital. Notwithstanding the marvellous progress of discovery in medical science during the last half-century, he believed that science was still in its infancy, and that what we had yet discovered was but an infinitesimal fraction of the revelations which still awaited us. He thought we might reasonably and confidently hope that, in the laboratories opened that day, new steps would be taken in the triumphal progress of science which would confer fresh lustre not only upon the institution, but on the country, and which would contribute to the advance and welfare of mankind.

Sir John Lubbock afterwards distributed the medals and prizes to the successful students, and formally declared the new laboratories and dental school buildings open.

In the list of prizes were the following :

Second Year's Prizes for Dental Students : John Brodribb Parfitt, prize £15 ; Frank Charles Bromley, certificate : Edward Clayton, certificate.

First Year's Prizes for Dental Students :

Herbert Wallis, prize £10; Urban Edward Cave, certificate; William Henry Pilcher, certificate.

Practical Dentistry Prize : Ernest Vincent Knight and John Brodribb Parfitt, equal, £5 each; Walter Robert Wood, certificate ; Percy Francklin Henry, certificate.

EDINBURGH DENTAL HOSPITAL AND SCHOOL.

The half-yearly meeting of the subscribers to the Edinburgh Dental Hospital and School was held in the School premises in Lauriston Lane, Dr. Littlejohn in the chair.

Mr. W. Bowman Macleod, L.D.S., read the report, which stated that the Session which they were now bringing to a close had been one of unmingled satisfaction. The number of students entering upon their studies at November, 1892, and May, 1893, had exceeded that of any previous session, the number on the working roll being at present 32. Year by year more attention was being given to the development of manipulative skill by a progressive course of technical training in the mechanical laboratory—a department of their instruction which was at present too restricted owing to want of funds, but which he hoped to see set upon a broad and liberal footing, encouraged as they had been by the generous recognition of the Lord Provost and Town Council in their allocation of the residue grant. In the meantime they were doing the best they could with their limited means, and turning a portion of their technical instruction to good account, by conferring a boon upon the poor of the city, in supplying the more necessitous of them with dental appliances constructed by the more advanced students. In the allocation of prizes for general excellence in hospital practice, the committee after careful consideration of the work in all departments had awarded the senior medal to Thomas Dilks Page—Mr. George Arnold Wood, Mr. John Kyle Mackintosh, and Mr. Robert Lindsay receiving certificates of merit. In the junior division Mr. Robert Atkinson Hudspeth gained the medal, while Mr. Arthur Heron, and Miss Lilian Murray were found to be worthy of honourable mention. In the class competition Mr. T. Dilks Page gained the medals in dental anatomy, dental surgery, and in dental mechanics. Mr. Charles F. Page gained the bronze medal in dental surgery. The Ezard medal for a special competition in gold fillings was carried off by Mr. George Arnold Wood, and the Macgregor medal for the best all-round senior student, decided by the votes of his fellows, was awarded to David Robertson Campbell. In the medical classes attended at the University or the extra-mural school the dental students had as usual stood well up in the award list. As regarded hospital work, during the six months ended June 30, the number of cases treated by students had been 6242. Of these cases over 2000 had been those of teeth saved by filling, and 400 cases treated and preserved by "scaling," whilst 74 patients received artificial dentures, and 27 children were supplied with regulating appliances. The remaining cases were extractions, including the administration of anæsthetics to over 200 patients.

Dr. Littlejohn congratulated the school on the satisfactory report which had just been read. The Dental School had now, he said, taken its position among the necessary institutions of Edinburgh. It was as necessary to their well-being as the Royal Infirmary, and he was pleased to think that the College with which he had the honour of being connected had recognised its value, and that the Town Council, of which he happened to be an officer, had also, in a very munificent manner, shown its appreciation of what the institution was doing for Edinburgh.

The prizes were thereafter presented to the successful students, and the proceedings closed with the award of a vote of thanks to Dr. Littlejohn for presiding.

DEATH DURING THE ADMINISTRATION OF NITROUS OXIDE.

On Tuesday afternoon, a sad occurence took place at the dental surgery of Mr. C. D. Grundy, at Branch House, Bradford Road, Batley. Joseph Lightowler, aged 39, who is a miner, and for a short time has been working at Howden Clough, went in company with Wright Lockwood, his brother-in-law, to Mr. Grundy's place, for the purpose of having several teeth extracted which had been causing him great pain for nearly a fortnight. Mr. Grundy took Lightowler into the surgery, and upon examining his mouth he found that he was deformed. The jaw-bone had been dissected and cut away, the chin was extremely small. The mouth was very small, and the normal shape and condition were altogether different to that of an ordinary patient. Mr. Grundy was very anxious that Lightowler should have the teeth removed without administering gas, but he appeared to be afraid of pain, and persisted in having the teeth extracted with gas. In the presence of his assistant, Mr. Grundy then gave him a small quantity of nitrous oxide gas from a small bottle which had been used for other patients, and almost immediately they both noticed something unusual in his breathing. Mr Grundy ceased giving him any more gas, when he had only half the quantity usually necessary for the purpose of an operation. Mr. Grundy also tried to seize the tongue to try and draw it forwards, and reversed the forceps in order to do this, but the poor fellow appeared to die almost immediately. Deceased was laid on the floor, and artificial respiration was resorted to, but without effect. In the meantime three messengers were despatched for medical aid, and upon Dr. Swan's assistant arriving about ten minutes afterwards he declared life to be extinct. The affair, on becoming known, caused quite a sensation, and hundreds of people collected in the road before the body was removed from Mr. Grundy's premises.

On Wednesday night, an inquest, which lasted above a couple of hours, took place at the Waggon and Horses Inn, Chickenley, before T. Taylor, Esq. (coroner).

John Lightowler, miner, was the first witness called. He said he lived at Exley's Buildings, Chickenley. Deceased was his brother, and was unmarried. Deceased had lived with him for some time, but had been out of work about three months. About a week ago he got employment at a colliery at Howden Clough, and since then he had been living with his sister at that place, but came toChickenley to spend Sunday. Two years ago the deceased had the Russian Influenza, but since then had enjoyed good health. He complained of having toothache for the last fortnight, and he tried to stuff two hollow teeth. When deceased was three years old he had his jaw broken. At that time he was living at Netherton, and the accident occured while he was having two teeth drawn.

The Coroner : What part of his jaw was broken at that time ?—The jaw bone.

Did it prevent him from eating ?—No, he could chew his food all right.

Was his jaw bone taken out ?—Yes.

But he has been able to go about since, and he has enjoyed fairly good health ?—Yes, except when he had the influenza.

Charles Donald Grundy said : I am a dentist, and reside at Branch House, in Bradford Road, Batley. I did not know Joseph Lightowler before Monday last. He came to my place about half-past four with his brother-in-law, named Wright Lockwood, who was also a stranger to me. Deceased was the only person who asked to be operated upon. He said he wanted a few teeth out. I took him in the surgery, and placed him in the operating chair. He said he wanted gas. I examined his mouth.

The Coroner : Did you notice anything particular ?—He had a very curious mouth.

Was it of a peculiar form ?—Yes.

And what did you say to him ?—I told him he had better have them out without the gas, but he seemed to be very anxious to have the gas.

What did he say then ?—He would not hear of going on on without the gas, and I consented to give it to him.

Did you give him it?—I then called in my assistant, and we commenced to give him the gas.

And what then?—He took four or five very slow inspirations, and then he became unusually livid, or rather dark.

His face?—Yes, it showed quite unusual signs of asphyxia.

Proceeding the witness said:—I immediately removed the face piece, and having the forceps in one hand tried to grasp his tongue to pull it forward. Not being able to get hold of the tongue I used means to force forward the tongue to cause a clear air passage by reversing the forceps. I became very much alarmed with his appearance, and we took him out of the chair and laid him on his back on the floor. I got my assistant to operate his arms for artificial respiration, and we kept that up for at least ten minutes.

The Coroner: Was he dead then or alive?—I cannot positively say.

When did he die?—I don't know exactly.

Was he dead when you took him out of the chair?—I don't think he was but I saw no signs of breathing.

Witness further said: I thought I felt the pulse beat when I got him on the floor, but it was very faint. In the meantime we sent three messengers for a doctor, and Mr. Swann's assistant came to the house ten minutes after deceased was in the chair, and said that the man was dead.

Wm. F. Watts, surgeon, said he did not know the deceased. He first saw the body of the deceased about half-past three that (Wednesday) afternoon. It was then laid out. The lips and tongue were exceedingly livid. He opened the chest and found the left lung healthy, but very greatly congested. The right side of the heart was full of dark fluid blood. The right lung was also very much congested. The valves of the heart were healthy; the tissue of the heart was flabby and fatty. The liver was healthy and kidneys were the same but dark. There was a small quantity of liquid food in the stomach. The scalp was extravasated. The brain was congested both superficially and in its substance, otherwise it was healthy. He considered the cause of death was asphyxia. He considered that weakness of the heart could have been diagnosed from its beats, but as the valves were sound he thought no danger could have been anticipated.

Later on Dr. Watts, in reply to the coroner, said there had only been thirteen cases recorded of persons dying while under the [illegible] of gas, and gas had been administered in millions of [illegible]ly three had been attributed to the gas itself.

The Coroner: And in this case there was nothing else to cause the death, the organs were in such a state, except the heart, that the man was not a person expected to die suddenly.

Dr. Watts: No.

The Coroner: Externally and internally he was considered to be a fair healthy subject?

Dr. Watts: Yes.

After hearing other evidence, the jury returned a verdict of "Died by misadventure," and stated that they did not attach the slightest blame to Mr. Grundy.

OBITUARY.

We regret to announce the death, after a short illness, of Mr. Percy Harry White, M.B., CM, Edin, M.R.C.S., &c. The deceased gentleman was the fourth son of the late Richard White of Norwich. He was originally in general medical practice, but afterwards entered at the National Dental Hospital, and, having completed the full curriculum, took the LD.S., Eng. in 1890. Since then he has practised at 34 Bruton St. W., and was also on the Medical Staff of the National Dental Hospital, where his ability and genial character were much appreciated by his colleagues and the students, and where his loss will be much felt.

APPOINTMENTS.

William Rushton, L.D.S. Eng., appointed Dental Surgeon to the Brompton Hospital for Consumption and Diseases of the Chest.

Mr. A. J. Cardell, L.D.S. Eng., has been appointed Honorary Dental Surgeon to the Western Dispensary, London.

VACANCIES.

National Dental Hospital, Great Portland Street, W. The posts of Assistant Dental Surgeon, and of House Surgeon are now vacant. Application to be sent to Mr. E. Almack, Secretary.

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester during the month of June, 1893.

Number of Patients attended .	1101
Number of Extractions . .	685
Number of Extractions under Anæsthetics .	150
Gold Stoppings . . .	59
Other Stoppings . . .	163
Miscellaneous {advice, temporary fillings, scalings, dressings, &c. . . .	408
Crowns	6
Irregularities . . .	13
Total . . .	1484

J. C. LINGFORD, L.D.S. Eng., *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

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PERSONAL RECOLLECTIONS OF THE DISCOVERY OF ANÆSTHETICS.*

By Parsons Shaw, D.D.S.

No new discovery suddenly bursts upon the world, but is the ultimate outcome of a long series of thought aiming in one direction. There can be no doubt that the wish to discover some antidote to pain in surgical operations has been prominent in the minds of men from immemorial days; and many very nearly successful attempts have, from time to time been made. But no agent was introduced that promised complete success, until Sir Humphrey Davy discovered the Nitrous Oxide Gas. Yet, although the discoverer intimated that it would be of use as an anæsthetic, no one seems to have "caught on" to the idea. It has been attempted to make it appear that this intimation of Sir Humphrey Davy was the beginning of the anæsthetic discovery. It was almost, but not quite the beginning, as we so often find to be the case.

In a work published as near as I can make out about 1820, and entitled "Dr. Syntax in search of the Grotesque," there is a passage that is a curious proof that Sir Humphrey Davy's intimation did not find any resting place in the minds of surgeons; which is, at the same time, an indication how near one may come to a great discovery and miss it; and shows the great practical difference between doing a thing, and *almost* doing it.

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* Read before the Manchester Odontological Society.

The scene is in Paris, and the doctor has been making a visit to the catacombs in company with his wife Dolly. On their emergence

"Dolly cries, 'My jaws do burn,
I've caught the toothache from the damp,
So to the doctor let us tramp.'

'Here lives, my dear, a skilful man,'
Said Syntax, 'called Le Charlatan,'

Le Charlatan, with knowing grin,
Welcomed his patient, heard her case,
Received his fee, and took his place.

Our dentist quickly twisted out
The offending tooth, and Dolly rose.
Le Charlatan observed, 'Suppose,
Madam, you sniff some nitrous gas
To assuage the torments of your face.'"

There can be little doubt that this description was drawn from facts, and that in either London or Paris (probably in London), some person as early as 1820, united gas administration with tooth drawing. But it is inconceivable that any man, however ignorant, after having got the idea of easing pain *after* tooth extraction should have not thought of giving the gas *before* the operation. And it is yet more inconceivable that of the many thousands of intelligent readers of Dr. Syntax's exploits,—for the work had great popularity in its day,—no one caught the suggestion so broadly given.

Although a great deal has been written on the question of the discovery of anæsthesia, much misconception yet prevails. Until quite recently it would provoke a stare of surprise in this country to venture upon the suggestion that Sir James Simpson was not the discoverer of painless surgery; and in America, Drs. Jackson, Long, and Morton have even now friends who claim the honour for them.

In discussing this matter I do not think that any one who had merely some thoughts on the subject, or who had at some time suggested how it might be accomplished, or had even partly accomplished it, can lay claim to the discovery. The real matter to determine is, who was it that brought the idea, which before was only embryonic into the actual world of reality. In attempting to throw some light on the subject, I wish to remind you that I am relying almost entirely upon the facts which are within my own personal knowledge, and those I had first hand from the actors themselves, in what I am going to relate. There are various sources of information on this subject, and others have told the story better than I can ; but I doubt if any other person was fortunate enough to have been thrown in the way of so much original information, and to have been brought into so many different relations with those connected with this great discovery. So I thought it would not be uninteresting for you to hear what a member of this Society personally knows of what took place in regard to so important a matter over forty years ago.

In the year 1844 I was a dental student with Dr. Messenger, of Boston, and one day in December of that year, I received through Dr. Messenger, an invitation to attend the private seance of a Mr. Colton, who was in the habit of going round the country lecturing on N_2O, then universally known as the "laughing gas," and administering it to those who chose to come upon his platform. I should say that the exhibition was the chief part of Mr. Colton's performance, the lecture simply consisting of a bare statement of the properties of the gas, how it was made, and its discovery. Colton made the gas in an apparatus very similar to those furnished to dentists when it was first introduced into this country, but he administered it in a manner which would astonish anyone at the present time. He had a number of india-rubber bags, furnished with common wooden stop-cocks. From the gas holder the gas was run into these bags ; and when inhaled, the subject applied the end of the stop cock to his mouth, held his nose so that he should breathe the gas only, and turned on the tap, presenting a most ludicrous appearance, and at once suggesting fun. Of course, his exhalations came back into the bag and united with the nitrous oxide; so that it can be easily imagined what the mixtures soon became. Nor was this all, or the worst; for when he had got enough gas to set him off into the inevitable laughter his proceedings had inaugurated, the bag was handed over to another, who not only breathed this poisonous compound, but rendered it still more poisonous every time he exhaled. When it is remembered that Colton never succeeded in killing any one of the promiscuous crowd who thronged his platforms, I think we may conclude that the gas is a safe agent. It was to see the gas made, and to inhale it, if I desired, that I was invited to this private meeting of dental and medical students. But the main incident at that meeting, and the one which makes me remember it, was a matter of such importance that it has become a part of dental history. When Mr. Colton found I was a dental student he told me of an incident that had happened at the last place he had visited, which was Hartford, in Connecticut. While there, so he told me, a dentist Wells had an ~~aching~~ tooth out without pain, under the influence of the gas. Colton mentioned this merely as a curious incident, and he certainly then had no idea that a great discovery had been made. I name this because he afterwards had a great deal to do with bringing the gas into notice as an anæsthetic. From what I subsequently learned in Hartford, from other sources, it appears that the full particulars of this incident mentioned to me by Mr. Colton were these. Dr. Horace Wells, of that city, had gone to one of his ~~private~~ meetings and inhaled the gas. While under its influence Wells noticed that he suffered nothing from an aching tooth which had been giving great and continuous pain for some time. That was the suggestive starting-point in the anæsthetic discovery. At the public exhibition in the evening Dr. Wells also noticed that one of the subjects bruised himself a good deal against a form. Wells asked the man if he felt pain at the time, to which he answered that he felt nothing. This was the second step in the discovery. Dr. Wells then got Mr. Colton to administer the gas the next day, and a brother dentist removed the offending tooth from his mouth. Dr. Ri No pain was felt, and the anæsthetic discovery was made complete. Horace Wells was a native of Connecticut, having been born near Hartford. He had a fair education, was a good dentist for his day, and possessed a mind quite above the average of his fellows. The quick perception and rapid and accurate reasoning which led him to make this great discovery, show him to have been a man of large and original powers.

His discovery greatly elated him, for he was profoundly impressed with its importance. The consequence was that he disposed of his practice to spend some time in introducing it to the world. In furtherance of that idea, he came to Boston about March 1845 and made a great effort to induce the Medical and Dental Professions to see the matter in his light. Every one will now wonder that he did not find it all smooth sailing, but it was the old, old story over again. People always think they could never be so wicked or so stupid as to do the things so repeatedly done in the past; and I doubt if there is a dentist or surgeon living now who thinks he could have turned his back upon the man who proposed to introduce such a blessing into the world as painless tooth extraction. But human nature alters but little with the advancing cycles, and there will always be found among professional men not only those who have conservative minds but those who are always prepared to get a fleeting reputation for wisdom by taking the negative side of every new question.

It is quite safe to say, "I do not think so," for it is not necessary to give a reason for not agreeing. But when a man undertakes to support the affirmative side of a question he is obliged to give his reasons and then he finds himself confronted by those who hearing, cannot and will not hear; and seeing, cannot and will not see, and delight themselves by wagging their empty heads and smiling their idiotic sneers.

Poor Wells found himself at once face to face with not only the naturally conservative mind that moves slowly but with the whole crew of blockheads, who laughed and shouted at the bare idea of the thing he suggested; and this whole matter would have, for the time, ended in nothing had there not been a few active minds that saw a great discovery had been made, and were determined to give it a fair trial. Foremost among these was Dr. Warren, a nephew of that General Warren who fell at Bunker's Hill, and himself then a great surgeon. He took the matter up and arranged for Wells to give the gas at the Massachusetts General Hospital, while he operated. But Wells was nervous, and made insufficient preparations. The result can easily be imagined when we remember the constitution of the average Medical and Dental student of that time.

Not considering, nor do I suppose caring, what had caused the failure, these young gentlemen fairly hooted Wells out of the place. I have often thought how many of them have since sung the glories of anæsthesia ; and have wondered how they must have felt when they discovered, in after years, that the man they saw depart so crestfallen amid their triumphant jeering was destined to leave an immortal name in medical history while their own little fame could last, at best, but a few fleeting years.

There was another cause of Well's failure in Boston, which the professional man will appreciate. There was a townsman or friend of his named Morton, who was also a dentist, who had gone into practice in that city. Whether Wells had ever thought of going there himself, I never knew; but, for some reason or other, he had associated his name with this man, who had begun to practise under the style of "Wells & Morton." In a very short time, however, Wells' name was withdrawn; but there had evidently been no disagreement, for when he came to Boston, he made Morton's rooms his head quarters. Morton certainly did not belong to the inner circle among dentists, by a long way, and was not such a person as the better men cared to meet. I need not say to a body of professional men that such a connection created a strong prejudice against Wells, and that many dentists could not be induced to investigate a proposition that came from a man so connected. It was a great pity that Wells was so heavily handicapped on his appearance in Boston, for otherwise he certainly would have had a better reception.

It is not to be supposed that I was so impressed at the time with what I saw and heard of the first mention of anæsthesia that I am able to remember all I am now telling you; but it is owing to the subsequent interest which this discovery excited that it is so vividly recalled to my memory. Not only do I remember the great interest that was excited, but I can recall Wells' general appearance, for he called upon, and had a long interview with Dr. Messenger. He was of medium height, rather broad, and, I think, slightly round in the shoulders, and had a head quite above the average size. He was evidently more of a thinker than a talker. I can see him now as he stood with Dr. Messenger. That gentleman was greatly interested, but seemed to think that as teeth had been so long extracted without anæsthetic aid, such an innovation was but little needed. Wells showed how deeply grieved he was by Dr. Messenger's conservative views, and was greatly depressed from his inability to arouse in the minds of others his own sanguine visions. Indeed, if my memory does not play me some phantastic trick, there was on his face when I saw him evidence of that deep and bitter disappointment which culminated in his death soon after.

It seems strange that those who do the most good to others generally suffer the most at their hands. Although I had heard from Colton in Dec. 1844 about Wells' success in having a tooth extracted without pain, and had seen him at Dr. Messenger's rooms and there heard his views on his discovery in the spring of 1845, the most interesting and the most decisive part of my personal experience in connection with this matter was in the summer of that year while spending a fortnight in Hartford. While there I made the acquaintance of the very gentleman who had extracted Wells' tooth when the discovery was made, and who had taken his practice. Among the other things he had bought was the machinery Wells had erected for making and giving the anæsthetic gas. The idea of painless tooth extraction was then so new that but few people could be induced to try it: but this gentlemen held a sort of field day once a week for its administration. On not less than two occasions I was invited to attend, and assisted and saw teeth extracted without pain. Now let us look up our dates. Colton had told me of the successful use of the gas in tooth extraction more than two years before any one pretends to have used chloroform, and more than eighteen months before any one pretends to have used ether; and I saw Wells only a little less than two years before the introduction of chloroform, and only a trifle less, if any, than eighteen months before the introduction of ether. And more important still, I myself assisted in the painless tooth extraction by means of the gas eighteen months before the introduction of chloroform, and more than a year before the introduction of ether. So I think you will be able to understand why I have been all these years, while Morton was having a reward for the anæsthetic discovery by the means of ether, and Sir James Simpson was receiving the freedom of the city of Edinburgh for the introduction of chloroform, and taking the credit, by implication, of having made the anæsthetic discovery, unceasing in my efforts to place the honour where I knew it belonged.

For a time the case seemed almost hopeless, for throughout Europe, Sir James Simpson held the field ; and it was apparently useless to dispute his claims. But a curious incident set the matter right. Fired with just indignation that Simpson should allow his friends to bestow upon him the credit of this discovery, Dr. Jacob Bigelow, of Boston, fiercely assailed him for this and for the misleading article in the Encyclopedia Britannica, written by him. Now, Dr. Bigelow was a supporter of Dr. Jackson's claims to the introduction of etherization, in which he was right ; but he did for Jackson just what Simpson's friends did for him,—that is, left it to be inferred that the introduction of etherization was the anæsthetic discovery ; so that his assault upon Simpson was very like the old case of pot calling kettle black. Simpson was very ill at the time and never recovered. Whatever were his motives, when Bigelow made it clear that ether preceded chloroform, Simpson executed a flank movement on him and took sweet revenge by replying, in effect, that Jackson could have no standing as the discoverer of anæsthesia, for if he and chloroform had been preceded by ether, that agent and Jackson had been preceded by Wells and Nitrous Oxide gas. Since then the matter has remained settled.

Now for the introduction of etherization. When I assisted in giving the gas in 1845 no one else was using it but the gentleman in Hartford to whom I have referred; and it is impossible to say what would have come of Wells' discovery, —although I do not think it could have been forgotten,—if two curious and amusing scenes had not been enacted in the rooms of Dr. Jackson and the man Morton, before mentioned.

Dr Riggs

It appears that while in Boston, Wells had demonstrated the effects of the gas upon various persons in Morton's rooms. It was not, therefore, strange that in September, 1846—a year after, let me repeat, I was in Hartford—Morton had an application to have a tooth extracted, from a person who had heard that his place was where teeth were taken out without pain. The only wonder is that owing to Wells' experiment, he had not been overrun with such applications. Morton told this person that is was all a mistake, that there was no such thing. But the patient declared that he would have no tooth taken out without it was a painless performance; and, finding him determined, Morton conceived the brilliant idea of slipping out of his back way into the office of Dr. Jackson, then the famous chemist in America, and attempted to borrow such a bag as he had seen Wells use in giving the gas. What led up, in Morton's rooms, to that now famous interview, and the interview itself, I had almost immediately afterwards from Dr. Kendal, who was Dr. Jackson's assistant. Morton first met Kendal, and when he asked for the bag, that gentleman knowing his ignorance, wanted to know what he intended to do with it. Morton innocently explained to Kendal the state of affairs. "But," replied that gentleman, "you have no gas." Morton's answer was that he knew that, but only intended to let the man breath air awhile, and when he thought he had taken the gas, he (Morton) would get hold of the tooth and pull it out before the patient could realize what he was doing. Kendal declined to be a party to any such transaction, and endeavoured to explain to Morton what might be the consequences of his proposed cunningly devised deception. While this conversation was going on, Dr. Jackson came up; and, when informed of Morton's intentions and request, said to Kendal, "Sulphuric Ether will produce similar effects to the gas, give him a little, and a sponge on which to administer it." So ignorant was Morton that he inquired if it (meaning the ether) was a powder! Kendal did as directed, and Morton went away. The next thing that either Jackson or Kendal heard of the matter was that Morton had succeeded so well that he had gone off and patented the idea under the name of "Letheon." I need hardly say that such a patent was invalid.

I take it for granted that I have made it clear that Horace Wells was the discoverer of anæsthesia by means of the nitrous oxide. The next question is, Who is entitled to the introduction of ether? I could never discover any merit on Morton's part in this transaction, for he had absolutely nothing in the discovery of anæsthesia, and his name is fast sinking into the obscurity from which it never should have arisen. Anæsthesia was thrust upon his notice by Wells, when he came to Boston, but he did nothing to assist that gentleman. And it was entirely owing to Wells' experiments in these rooms that he had the application from the patient to whom he first gave the ether. (The most important fact that he got his ideas from Wells is seldom named in the published accounts of this discovery). And it is just as accidental that Dr. Jackson happened to overhear his conversation with Dr. Kendal, and suggest to him how to get out of his trouble. For the introduction of etherization, I think all the credit belongs to Dr. Jackson, just as Sir James Simpson is entitled to the credit for the introduction of chloroform and of anæsthesia into obstetric practice. But Jackson is entitled to no more credit than Morton for the discovery of anæsthetsia; and he has only himself to blame for allowing the effects of ether to become public through such a fellow; for he must have known of Wells' experiments in Boston, and must have given some thought to the subject, or else he would not have been so ready to instruct Kendal what to give Morton in his dilemma. But if he had been, before this time, so profoundly impressed by the importance of anæsthesia as his friends have since endeavoured to make appear, then why had he not said so? And how could he have waited to have his discovery demonstrated by such a person as Morton, in such an accidental way, and in such an unbecoming fashion? It is impossible to come to any other conclusion than that, whatever Jackson may have known of the effects of ether, he saw nothing in anæsthesia until its merits had been fully recognized by others.

Unless one has all the necessary apparatus for making the gas it is a tedious process: ether is a substitute easily obtained and as easily administered. The consequence was that when ether was suggested it was at once tried and found so successful that, for a time, it seemed as if the gas would be utterly forgotten. But, eventually it regained its lost position; and in 1868 more than a thousand dentists were using it in America. That was the year of its introduction into England as an anæsthetic. In the latter part of 1867 or the earlier part of 1868, I ordered an apparatus from America, and it arrived some time in March. About the same time an apparatus that had been ordered by Dr. Evans, of Paris, also arrived in London, and experiments were commenced in that city.

It took some time to get my machine into working order, and every proceeding had to be conducted with great caution; for, as I have intimated, I knew there would be a number of people ready to sing the old song of condemnation, if any thing happened. After a good many private experiments, all of which were successful, on the 25th of May a large number of medical gentlemen met me at the Hospital in Park Place, Manchester, to which I was then the honorary dentist, to see the gas administered. Dr. Gumpert who was then, as now, one of the Honorary Physicians to this Hospital, kindly gave me every possible aid; and Mr. Dunckerly assisted in making and giving the gas. The result was a success, and from that time the gas may be said to have become established, not only in Manchester, but in England.

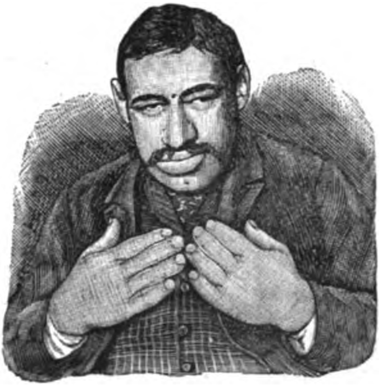
As the anæsthetic gas had not before 1868 been known in England, it was regarded as a new agent. In consequence of this error, I published a letter in one of the Manchester papers in June of that year, in which it was said, "The proto-oxide of nitrogen, often called "laughing gas," has been all at once brought before the European public as an anæsthetic. The opinion is general that it is a new agent. This is an error. It is the old agent: and by its use was the great fact discovered and demonstrated that a surgical operation could be made painless." Now, by a curious coincidence, an article appeared that same month in the "Atlantic Monthly," claiming the anæsthetic discovery for Dr. Jackson; upon which I published my letter in a pamphlet form, and with a suitable preface, sent a copy to leading medical men and Dentists, and to the leading Journals, and it excited much interest, for Wells' name was then almost unknown in Europe. What effect it had in causing Simpson to so neatly turn the tables on Bigelow, it is impossible for me to say. The interesting fact is that Simpson did lend his aid in settling most effectually, and once for all, the question as to who discovered anæsthesia.

I thank you, gentlemen, for the patience with which you have listened to a subject in which the very essentials of the case make it necessary for me to keep myself in the foreground from beginning to end, and I will close in the concluding language of the letter to which I have just referred. "Whatever may be the fate of the gas, the fame of him who first employed it to mitigate pain is secure; for it is certain that, however the thought may have occurred to others that pain could be obliterated, the undivided honour of elevating it into the divine sphere of usefulness belongs to Horace Wells."

A PECULIAR DEFORMITY OF THE MOUTH OBSERVED IN A CASE OF ACROMEGALY.*

By Prof. PARTSCH.

The history of the case is as follows. L. a miller from Breslau, hitherto healthy and with a good family history, after finishing his army course in 1877, noticed a gradual growth of his hands and face without apparent cause. At first the growth was persistent, but for the last three years it has been stationary. The thick-set, somewhat clumsy, but powerfully built patient looked very pale. The mucous membrane of the lips and eyes is pallid ; the face is swollen without being œdematous. The speech is slow and mental action sluggish. The lower part of the face is very strongly developed ; the lower jaw and the upper lip especially project and leave the forehead and skull receding. The lower jaw measures from chin to angle 14 cm., the ascending ramus, 9.5 cm. The lower jaw supports the enlarged, soft, spongy lower



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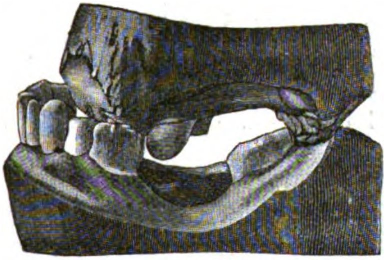
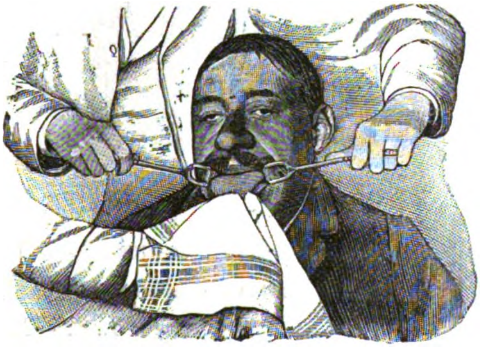
* Reported from the Polyclinic of the Dental Department of the Royal University, Breslau.

lip, which has the thickness of 2½ cm. When the mouth is opened we notice that the lower jaw projects at least an inch beyond the upper. The distance of the lower wisdom teeth from each other amounts to 6.8 cm., from the lower central incisors 4.9 cm. In the upper the distance between the wisdom teeth is 4 cm. and their relationship to the central incisors is indicated by 3.2 cm. The teeth are of poor structure and much decayed, and those of the lower do not articulate with those of the upper. The upper jaw is normal. The size of the tongue is peculiarly marked. The organ is soft, its mucous membrane strongly ridged and forming folds. In front, behind the tip, it is 7 cm. broad. It is moveable in all directions though with some difficulty. The skin





of the whole face feels thickened, shrunken and loose. The bones of the facial portion of the skull show no deviation from the normal. The neck is short and has a circumference of 41 cm. No swelling of the thyroid gland exists. The chest is well-shaped and of normal volume (102 cm. in circumference). The upper part of the back is strongly arched forward, which is not surprising considering the bent attitude of the patient.

A similar growth is manifest in the hands. Whilst the upper arms and fore-arms are by no means abnormally strong, and no skeletal changes are perceptible, yet the hands are strikingly enlarged and plump, both in length and breadth. The skin here, too, is slightly thickened, and looks a little blue, the movements of the different bones are free and unhindered. The measurements of the hand are as follows :—The length of hand from base to point of the middle finger is 21 cm., the thumb measures 7 cm., the middle finger 13 cm., the little finger 9 cm. The circumference at the middle of the hand amounts to 26 cm., that of the thumb to 8 cm. The feet also of the patient are terribly great and wide. They measure 29 cm., the great toe 8.5 cm.

British Journal of Dental Science.

LONDON, AUGUST 15th, 1893.

THE PHYSICAL AND MENTAL CONDITION OF SCHOOL CHILDREN.

THE Committee appointed by the British Medical Association to investigate the condition of school children, have issued a further report. In conjunction with a Committee instituted by the International Congress of Hygiene and Demography, a methodical arrangement of analysis and tabulation has been adopted, and when fifty thousand children have been inspected, it is proposed that the returns shall be submitted to professional actuaries. This, we can readily understand, will secure that the best results may be obtained from the investigations. The larger the number of cases, the more reliable will be the statements, and we are glad to find that it is hoped that altogether 100,000 children will come under observation. At present, although over 27,000 have been examined, the Committee, through lack of funds, have only some 8,000 in hand. It has been found possible to derive some very interesting information from an analysis of 50,000 cases published in 1892, and good use seems to have been made of the material in the way of bringing the importance of the subject under the notice of several learned Societies. Like so many other questions of a somewhat similar nature, which at first sight do not appear worthy of State consideration, the figures relating to the physical condition of school children will probably show that, if only from an economic aspect, there is much which demands attention.

In an appendix to the Report we find a brief statistical statement derived from an examination of some 16,000 children in 18 schools. The figures refer to the numbers of children showing certain defects, and also the numbers when the cases are arranged in groups. We notice that in the list of defects, abnormalities of the cranium, ear, palate, nasal bones and other points receive attention ; but, unless covered by the term "other defects," no mention is made as to the condition of the teeth. Amongst the "groups of cases" occurs the heading "nutrition low," and it certainly seems to us that the scheme cannot be considered complete without some reference being made as to the dental defects, for these must bear upon the physical condition of the children directly, and, indirectly, have a relationship possibly with the mental state.

We can readily imagine that if this point has been considered at all by the Committee, it proved troublesome, for anything like an accurate recording of dental defects demands some special knowledge. Fortunately there are not wanting some interesting statistics which will be available for comparison by the Committee. Thanks to the collective investigation by some dentists, some striking figures, derived from observations of over 10,000 school children, can be now brought forward to show the urgent necessity which exists for dental care being provided; and no preventive arrangements based upon reports such as that presented to the British Medical Association will be satisfactory if the question of defective dentitions be neglected. The Committee before mentioned are endeavouring to spread a further knowledge of the conditions of child life, and with this end in view they desire to promote lectures upon the study of children. They have addressed a letter upon the subject to the Universities, Training Colleges, and other educational bodies. What use will finally be made of the dental statistics remains to be seen, but we believe arrangements have been made to embody them in a report, which under proper precautions may be placed in the hands of school officials and other responsible laymen.

THE ABUSE OF MEDICAL CHARITIES.—A Committee which has been investigating this subject suggests that a maximum wage limit should be fixed and that persons earning more shall not be entitled to relief. It is proposed that an enquiry officer should be appointed to investigate the circumstances of doubtful applicants, and in reply to objections on the ground of the expense involved, it is suggested that the Hospital Sunday and Saturday Funds, and the Charity Organisation Society could step into the breach. The wage limit proposed is 45s. for married and 25s. for single men, but there seems to be a general opinion in the provinces that this is too high. The experience of a few London Hospitals show that a system of enquiry is practicable and is satisfactory to subscribers and the public. The *Lancet* thinks that it will be necessary to take a firm attitude on this question and that those Institutions will be most favoured by the public who do so most earnestly and promptly.

THE HOSPITAL SUNDAY FUND.—The collection made in the Metropolis this year, was £3000 less in amount than that of last year. A meeting of the Council was held on the 1st instant, when the Report of the Committee of Distribution was received. It recommended the payment of awards to 181 Institutions, including two dental hospitals. In the discussion which followed, the Chairman said the Committee had always done its best to check the worst form of hospital abuse—namely, improper expenditure. Some institutions, however, claimed that they should manage things for themselves. In such cases, all the Committee say is that if the hospitals are not conducted in a proper manner, they must not come to the Fund for help. It was stated that Lord Sandhurst would soon call his committee together, and it was expected that some practical conclusion would be made with regard to a central board.

THE FRENCH DENTAL ACT.—The President of the French Republic has just issued a decree which arranges some of the details for carrying into effect the provisions of the Act recently passed. It appears that there is to be a curriculum of three years, and candidates must produce, before entering their names, some evidence of preliminary education, either the bachelor's diploma, a certificate of the higher primary education, or some similar proof. There are to be three examinations, as follows:—1st, The elements of anatomy and physiology, special anatomy and physiology of the mouth. 2nd, Elements of pathology and therapeutics; special pathology of the mouth; Materia Medica; Anæsthetics. 3rd, Clinical; Dental diseases and affections related to them; Operations; Construction of a piece of mechanical work. The examinations are to take place at the medical schools where there is dental teaching; the board is to consist of three members, some of them dentists, presided over by a professor of the medical faculty.

THE NATIONAL DENTAL HOSPITAL AND COLLEGE.—The new building, at the corner of Great Portland and Devonshire Streets, is now rapidly approaching completion, and bids fair to offer a suitable home for both Hospital work and School teaching. The building is to be lighted throughout by electricity, and a current is also provided for motors in the Filling Room. This latter runs round three sides of the building, and is extremely well lighted. There is room for 60 or 70 chairs, and a water supply is being carried down the walls for the attachment of saliva ejectors. A system of cross ventilation has been employed, and, in conjunction with the arrangements for warming the whole building, will leave little to be desired from a comfortable, or hygienic point of view. According to the statement in our advertisement pages, the Winter Session will open in the new premises on October 2nd.

The Patient and the Dentists.—A French Contemporary offers to guarantee the authenticity of the following little episode, which took place in a Parisian suburb:—

Mdme. X. having a tooth to be extracted, called upon M. Y., a dentist, who forthwith proceeded with the operation. Either from clumsiness or the difficulty of the case, he broke the tooth. "Really, Madame," he hastened to say, "it is not surprising that this tooth should be broken, for you have a regular bear's jaw." The lady, suffering from the operation, did not think of protesting, but, some days later, she went to M. Z., another dentist in the same place, and stated her case to him. She finished by saying, "Would you believe, sir, that your *confrere*, not content with breaking my tooth, told me that I had a jaw like a bear." "Well, Madame," said M. Z., courteously, "he was quite right, but he shouldn't have said it." Madame X. fled precipitately, and is still flying.

Experimental Research.—Dr. Oliver in his address, at the British Medical Association, spoke of the relationship between physiology and medicine, and claimed that few things stand out more prominently than the immense development of these two studies within the last few years. Not less striking is the important part played by the experimental method in the investigation and treatment of disease. The speaker pointed out that the object of the medical profession is not simply to treat disease, when developed, with the best weapons at command, but it is a duty to prevent it. If bacteriological investigations are prescribed, and the profession precluded from fighting the microbes, the microbes may, after all, prove victorious. Dr. Oliver said the subject of experimental inquiry must rest upon a rational basis, and be considered apart from emotion and feeling. "It is difficult to appraise the ethical value of a human deed, but surely the welfare of society is no mean standard by which to estimate the morality of actions."

DENTISTRY IN RUSSIA.—According to *Die Zahntechnische Reform*, most of the dentists in Russia are Jews, and a new ministerial order has been issued to the effect that in future only a certain number of dentists will be admitted, in proportion to the population. In order to be able to practise in Roumania, one must possess a diploma from some local medical faculty. The dental mechanicians now established in Roumania, are no longer allowed to practise unless they work in conjunction with surgeons. Foreign dentists must be approved by the Government, and pass an examination before an authorised board consisting of a member of the Sanitary Council, a professor of the Medical Faculty, and a dentist.

RECORDS show, says Dr. P. W. Moriarty, that one in twenty of surgical operations performed for congenital cleft palate, are successful as an operation, but we never see a case where the speech has been made perfect. In fact, the more successful the operation, the greater the injury to the patient owing to the increased difficulty of mechanical treatment The cause of the failure of surgery to improve the speech is that even if the tensor palati muscles are divided in operating, the palate after an operation is not of sufficient length to close the opening between the cavities of the mouth and nose.

LABORATORY PADS AND HOLDERS.—Pads and holders that are non-conducting and will not scorch, are very convenient when soldering, baking, &c. These can be easily made by any dentist. Procure at the plumbers some asbestos paper, such as is used for covering hot-air pipes ; get some of each, the thinnest and thickest grades, use the thin for making holders and thick for bench pads, the latter to protect the bench from hot flasks, soldering, &c. Cut the paper into sizes and shapes desired ; now lay these pieces on some heavy flannel : cut out the pieces of flannel one inch larger on all sides than the asbestos ; turn the edges up over the paper and stitch fast. In using these always have the asbestos side of the holder or pad next to the hot surface.—*Items.*

Abstracts of British & Foreign Journals.

INTERPROXIMATE SPACES.

By C. E. **Meerhoff**, D.D.S., Chicago.

Probably at no time in the history of the dental profession, has the plea for more thorough manipulative skill seemed so imperative as to-day. The uncalled for haste in operative work, owing to a limited allowance of time, would seem to explain, partially at least, the unfinished if not hasty and faulty operations that are constantly being brought before us. And this fact further appears to be on the increase rather than otherwise. To this, together with a lack of reliable literature upon the subject, until of comparative recent date, may be attributed, to some small degree at least, the faulty condition of such great numbers of interproximate spaces with which we continually come in contact; and the frequency with which they are met should impress all with the subject of their great importance.

This space, existing between the distal surface of one tooth and the mesial surface of its neighbour, except as applying to central incisors and wisdom teeth, is in reality not a space in its general acceptance. Being of a somewhat pyramidal shape, its base being the alveolar border and its apex the point of contact of the teeth, it is, in its normal condition, completely filled by the continuation of the gingival tissue. In width it varies greatly in different teeth of the same denture, those between the molars being larger than those between the central incisors and the latter wider than the central-lateral incisor spaces. The largest spaces are found between teeth of that variety familiarly designated as having belled crowns.

The minimum width of these spaces, according to Dr. Black, mesio-distally at their bases is approximately from ten to fifteen hundredths of an inch, his measurements of the arch at the points of contact of the teeth being five inches, while that of the same teeth at their neck, showed but three and one-half inches, leaving to the inter-proximate spaces one and one-half inches of the entire length of the dental arch, Being filled by the gingival tissue, this space in its normal condition should be nearly self-cleansing. Owing to the mechanical plan of its arrangement, particles of food becoming crowded between the teeth are very readily displaced by the mere act of mastication; they being forced upon the apex of the gingival septum and in this manner easily liberated, either to the buccal or lingual side.

The most perfect interproximate space is that one so arranged that it provides a self-cleansing space, a well-rounded or contoured surface, the minimum point of contact, and a space of such shape and size to permit of the maintenance of a healthy gum septum, or its reproduction, if it be lost. The maintenance of a self-cleansing space is of the utmost importance, since it is thus that a healthy gum septum is provided; for without it the space is a mere opening affording a convenient place for the lodgment of food particles, which in turn by their chemical change, are a constant menace to the integrity of any filling if not producing to a greater or less extent inflammation of the peridental membranes, or affections of a more serious character. The necessity of the production of a well-rounded shape to the tooth, is clearly demonstrated to us quite frequently, for it is not seldom that patients come to us presenting the anterior teeth, if not the posterior ones also, with flat fillings on their mesial and distal surfaces inserted without regard to the preservation of the inter-proximate space, and in consequence tipping toward the median line and their proximating surfaces in contact from the gum margin to the cutting edge. This is not noticeable only for the condition of the gum septum, but the great change in the expression of the face, given it by the altered outlines of the dental arches. It has been clearly demonstrated that teeth with a minimum point of contact, afford the least surface for the lodgment of food debris; in such cases the slight movement of the teeth in their sockets, causing a gliding movement of the teeth at these points, readily facilitates the dislodgment of such particles, thereby conducing to a favourable condition of the gum septum.

The presence of the gum septum in a healthy state is very essential, for it is clear to us that a cervical border of reasonable perfection, is in better condition to successfully cope with the extremely dangerous action of acids and ferments, if protected by a covering of gingival tissue, than if left with such surfaces exposed. The imperative necessity of the preservation of the interproximate space is at this time no idle fancy, hence some few precautions or rules of practice immediately become manifest. Among the foremost in importance is the acquiring of sufficient space, to enable the operator to properly perform the task at hand. It is needless at this late day to refer to the dire effects of the Arthur method of separation; indeed it is a question if the file used for such purposes has a place in the dentist's cabinet to-day. It is at least bad form to make use of a file for this purpose and it is rarely I think that good results are obtained where such method is employed. Sufficient space should therefore be acquired by the use of cotton, rubber strips or where necessity demands, suitable appliances for quick wedging, and no attempt should be made to fill the tooth until such favourable conditions do exist. The care of the gum septum here presents itself, for it is in no small number of cases that its continuity is destroyed by wedging, the use of wooden wedges, cotton, or the introduction of cotton or gutta percha in the treatment of pulp cases. Great care should be exercised, not to allow them to project beyond the cervical border of the cavity, very frequently the result of injudicious wedging is almost irreparable even though a good space and point of contact have been obtained. Another source of great injury to the gum septum is the use of saws and files; this is also to be discouraged for in many cases the gum septum is lacerated if not completely obliterated and while it may be regained in almost all cases, the pain accompanying the practice more than warrants its abolition. The finishing of a filling, no matter how carefully studied and planned, is of the utmost importance. How frequently the inopportune use of file or disc may perhaps have jeopardized the very principle the operator has laboured many moments to accomplish. The use of a very fine separating file to produce sufficient separation to permit the passing of a suitable strip for polishing, is perhaps admissable and yet there are few cases where a fine flat burnisher will not supply the necessary space. The careful finishing of the cervical border should be accomplished by use of some of the many forms of files now to be found upon the market. The use of narrow strips at the gingival border, gradually increasing the width as the finishing progresses until the point of contact is reached, will insure the consummation of the one object in view, namely a sharp point of contact with an increase of space as it approaches the base or gingival border. The disc may be made use of for the purpose of rounding and polishing the lingual and buccal walls, but should not be passed between the teeth, for by so doing the effects of all previous efforts to gain a prominent contact point may be entirely obliterated and a flat filling result. The entire procedure of preservation of the interproximate space is of such great importance that the tact and skill of the operator is constantly being called upon.

The Dental Review.

THINGS PRACTICAL IN DENTAL PRACTICE.

By J. G. Templeton, D.D.S., Pittsburg, Pa.

Instrument Polisher.—Burnishers give better results when new than when tarnished, and it is essential to keep them finely polished. In fact, it is desirable to keep all instruments polished. An efficient device for polishing can be made by fastening a piece of sole leather, or a piece of razor-strop on a block of wood of suitable size, and placing a little diamantin powder on the surface of the leather; then polish instruments by rubbing briskly on this surface. Diamantin is used by jewellers, and can be obtained from them or from their supply houses.

To Make Moisture Tight Gutta-percha Fillings.—Take common resin and dissolve in chloroform to desired thickness; place some of this in the prepared cavity, and by the time the gutta-percha is heated, the varnish will be in proper condition through evaporation of the chloroform. The varnish should ~~not~~ extend to the cavity margins. Apply the gutta-percha as usual, and pack with cold instruments. The cold instruments do not adhere as warm ones do. When completed the filling may be pared off to the proper contour by means of a heated thin blade instrument, and the filling smoothed by the application of eucalyptol or oil of cajuput.—

To Duplicate Models and Impressions.—Take printer's roller composition, melt in a water-bath till dissolved. Grease the model slightly with lard, and place it the same as if to mould a metal die, cover with a metal ring (a tin can opened at both ends will do), and pour the melted composition over the model. Let this stand over night. By morning the material is hardened and the model can be withdrawn. The composition being elastic it retains its shape, and a hundred models may be poured if necessary. Impressions may be duplicated in the same manner, by using impressions instead of model.

To Dry a Cavity Before Filling.—After applying absolute alcohol to the cavity, use a solution of sandarach and ether to line the cavity; dry this with hot air, which forces it into the ends of the tubules, completely sealing them; then proceed with the filling.

In Ligating Rubber-Dam, tie a small bead on the ligature, which, when tied around the tooth, will prevent the dam from coming over ligature; the bead should be on lingual side of tooth.

In Articulating Teeth, always take an impression of lower teeth when making an upper set, and in taking the bite have wax trimmed to show the length you wish the teeth to be, and bite into it just sufficiently to show the tips of cutting edges and cusps where the model made from lower impression can be placed in proper position, etc. For double sets make wax models for contour in restoration of features and to show length of teeth, and then try these models in the mouth, being careful to see that you have it right; then make plaster articulating models for setting up the teeth, setting up the lower ones first against a plaster articulating plate, its articulating surface corresponding with the articulating surface of lower wax model, then lay aside the plaster articulating plate and put the model of upper jaw in its place, and set the upper teeth to the lower ones. He adopted this method about twenty-four years ago, and in that length of time has not had to grind a cusp off to let front teeth come together, and can say the same for the method of making an upper set alone, which is all due to the care taken to get a correct bite in such cases by taking an impression of lower teeth, which takes a little more time, but is all remunerated for in the satisfaction one gets from seeing there is more to do when the piece is placed in the mouth with masticating surfaces perfect, and no need of any "grinding in" to get the front teeth together.

To Prevent Plaster Adhering to Rubber Plates.—Coat the model with a thin solution of soap and water just before packing the case.

A Method of Securing Perfect Impressions for Partial Upper Plates.—To take an accurate impression of the mouth for a partial upper set of teeth, smear plaster over the roof of the mouth with the finger, take a string about one foot in length, tie the ends together, put the tied end of the loop into the plaster on the roof of the mouth and add more plaster to throughly embed the knot, leaving the loop of string hanging down. In placing the plaster in the mouth care should be taken to have it come full half way over the grinding surfaces of molars and bicuspids and cutting edges of the front teeth, then trim the plaster and varnish the trimmed surfaces. The plaster should be so trimmed that it will fill up fully one-half of all spaces between the teeth, then cover all the remaining surface of the mouth and teeth with plaster, being very careful to have the teeth well covered and spaces filled in putting on plaster for the buccal and labial surfaces. When set, the plaster impression readily parts where it has been varnished, the palatial portion is dislodged with the help of the string used,and the pieces are then placed together and model made. If a tooth is irregular use modelling compound about it and trim suitably; then apply the plaster. If in removing it breaks where joined, remove the compound, place in position in the impression and pour the model.

Office and Laboratory.

ELECTRICITY IN ROOT FILLING.

By S. B. PALMER, M.D.S., Syracuse, N.Y.

The author read the paper by Carl Theodor Gramm (an abstract of which we published on April 1st.) and curiosity led him to see what could and what could not be accomplished. One whole day was spent in experimenting, until at last success rewarded the effort, all of which convinced him that perfect root filling by almost any method stands higher in imagination than in performance.

The storage battery and electrode were obtained, canal points made, and numerous roots of cuspid and incisor teeth prepared as for filling in the mouth. A dry root was treated, and not only was the canal instantly filled, but the entire root or dentine became so permeated with either the oil or paraffine as to resemble ivory soaked in oil, thus fulfilling none of the conditions met with in the mouth. The roots were then soaked in water, when there was penetration only as far as the dentine became dry. A number of roots were filled, both with and without the eucalyptus, and when perfectly cool were split open. The paraffine used in the experiments was highly coloured with vermilion. He soon learned that it was almost impossible to evaporate the moisture and dry the canal to the point of the cone. While the dentine would burn near the orifice, the conductivity of the copper was but slight when it was drawn down fine, like a hair broach. Again when the oil was used, a portion of it remained around the point, filling the canal to the apex. It required more heat to drive out all the oil than would be beneficial to the tooth.

When paraffine was added, only the space was filled that was free from oil; that is, capillary attraction would not draw the paraffine into the oil. Where the paraffine and eucalyptus came in conjunction, the filling was a soft paste, generally located around the copper point. The principle was correct, but the results were not satisfactory.

Being desirous of witnessing the operation, some glass tubes or straws were held over a bunsen flame and drawn to fine points, the glass thread broken off, and with a sharp file a scratch was made on the enlarged or bell-shaped end of the glass, which would easily break off, leaving almost a perfect representation of an incisor or cuspid root. Any length, size or taper can thus be made, and that very quickly.

The experiments were resumed, and every phase could be distinctly observed. The same results followed as in filling natural roots. To his mind the hindrances came from a lack of conductivity of the fine point of copper. It was evident that two electrodes were necessary, one to dry the cavity or canal, the other to heat the point, when it is to be inserted to remain. He made an electrode of the usual pointed form, with the addition that the canal point, as well as a part of the electrode, was formed of platinum. With this addition, perfect root filling is a possibility. When the point is separate it is not an easy task to insert or remove it, perhaps a dozen times or more, to dry the canal or volatilize the oil. With a stationary point there is no trouble. As seen through the glass, when driving moisture from the canal, it appears to be very difficult to boil the water the entire length of the metal, while with the lengthened electrode and a reciprocating motion—not to draw the point from the canal, but simply to free it from contact with the walls—it becomes heated instantly, and as may be imagined, either water or oil can be removed as far as the point reaches. Nay, more; by capillary attraction, in a degree the moisture in fine roots follows the electrode, and is thus evaporated. The points used are made of pure silver or gold, first fitted to the canal, the end in the pulp chamber being bent at a right angle, so as to be drawn readily with a fine excavator. The point is warmed and coated with paraffine. When the canal is dried, the filling point is introduced, the end touched with the blunt electrode, and it is carried to its place. One thing is certain; where the rubber dam can be used, roots can be sealed up with any resin or gum that will flow with moderate heat. Should it be necessary to remove the root filling, apply the electrode and draw out the point, and with a fine broach the canal can be cleaned of the surrounding filling.

He believes this to be the best and quickest method of filling roots that has yet been devised. Not only is the root perfectly filled, but there is no danger of forcing any of the filling through the end of it.

The Dental Practitioner.

ULCER OF THE TONGUE.

By Wm. Robertson, M.D. Glas.,

A short account of the following case, in which a novel mode of treatment was adopted with a successful issue, may not prove uninteresting. The patient a man, of about forty years of age, when I saw him on March the 20th last was suffering from an ulcer of the tongue. There was a history of a specific taint acquired about six years ago. This affection of the tongue had extended over a period of four years. He had taken stimulants freely and had during the whole time smoked considerably. The organ was painful to touch and during mastication. On his protruding the tongue, which he could do freely, it was observed to be large, flabby and indented, and its surface was covered by a shaggy, grey, thick fur. A large transverse track three quarters of an inch long with an ulcerated floor, stretched across the mid-dorsal region, and at its right extremity there could be felt in the substance of the tongue a rounded, painful swelling. Rather more than a quarter of an inch in front of this fissure there extended another one, which was neither so long, or so deep, but, like it, had an ulcerated floor. Two quadrilateral areas of thickened and infiltrated mucosa were noticed in front of and behind the anterior fissure, being hard to the touch and prominent. To the right of these areas there extended longitudinally, for over one inch, a shallow ulcer less than a quarter of an inch broad, the edges being indurated. Two symmetrically placed, round, indurated nodules were discovered near the tip in the substance of the tongue and the submaxillary glands were found to be enlarged and indurated, but painless. The treatment consisted in the surface of the tongue being freely soaked for some time in a 20 per cent. solution of cocaine containing resorcin and then being dried with cotton-wool. With a dermal curette the dense fur was entirely removed, with the result that a much better view of the lesions could be obtained. With a dermal galvano-cautery point at a red heat (after injecting a 20 per cent. solution of cocaine in a 2 per cent. carbolic lotion) the thickened areas of mucosa were freely punctured and the three ulcerated tracts were well scored over with the cautery. The effect of the first application was the disappearance of pain from the tongue, easier mastication &c. and a reduction in size of the whole organ. The patient was in addition to this put upon mercury (by inunction) and the iodide, and a 10 per cent. solution of boracic acid to wash his mouth with after meals was recommended, together with healthy exercise. A few days afterwards the rigid edges of the posterior fissure were destroyed by the cautery and the nodule at its extremity was freely punctured, as well as any portion of thickened mucosa, that was missed at the first application. In three weeks' time the dorsum of the tongue had almost assumed a healthy appearance; the raised nodules were gone, the tracks filled up and the ulcers were healed. The patient was forbidden the use of tobacco and stimulants for one year and was told in the meantime to live almost exclusively on farinaceous food, milk, &c. A week later the mucosa was healed and was normal to the touch and painless. The ulcers could be traced by three linear cicatrices, which were soft and pliant. The two nodules near the tip were almost gone and the other nodule was just traceable. The inunction was still continued.

Remarks.—At first sight the tongue presented a most suspicious appearance and was referred to guardedly by other medical men who had seen it. The pain was considerable and worried the patient. The three nodules in its substance were also suspicious, although one authority asserts that cancer rarely appears at more than one spot. Yet this statement is not generally accepted. The only treatment adopted had been persevered in for four years without result. There is no doubt that the curette and galvano-cautery were mainly instrumental in bringing about the successful issue. The removal of the sodden epithelium and other decayed products must have lessened the irritation, but the cautery at once abolished pain by destroying terminal nerve twigs. It also destroyed much of the infiltrated tissues and stimulated healthy repair by the absorption of what remained.

The Lancet.

THE TREATMENT OF NEURALGIA OF THE TRIGEMINAL NERVE.

It is not necessary to define neuralgia, but a trigeminal neuralgia has certain peculiarities. The anatomy of the Gasserian ganglion and its three branches is known to all, but the difficulty of getting at them in the living person is little appreciated except by those who have tried. This neuralgia differs from ordinary neuralgia in being paroxysmal and is probably the most painful that one has to do with. There are periods of absolute quiet between the paroxysms. The changes seen in the parts supplied by this nerve and its branches are very slight in proportion to the pain the patient feels. There is generally no change at all or at times a slight glazed appearance of the skin and very rarely there has been atrophy of the muscles supplied by this nerve.

The age at which this form of neuralgia occurs is a most important etiological factor. It generally occurs in persons over forty, but one case in a woman of twenty-seven has been reported. Another etiological factor is, that there are certain points of pain where the nerve makes its exit through the bone. When the surgeon has been called in, the treatment by drugs has been exhausted. Quinine and arsenic are drugs that do the most good and it was formerly supposed for this reason that these neuralgias were malarial, but the more recent discovery of the plasmodium malariæ has shown that this is not always so. The next best drug is aconitia pushed to its full physiological effect; also antipyrin and antefebrin have been used with good effect. The surgical methods are section of the nerve, stretching, and excision more or less far back. These are the three surgical methods used at the present day. Excision of the nerve was first done by Carnochan in 1858, and his operation was classical. The patient on whom he operated was a physician of the State of Maryland, in Caroline County. His operation was successful. Obalinski operated on a case several times but relief was not permanent. There are numerous ways of getting at the nerve. We may take it from in front or from behind. Rose, and Anderson of Chicago, were the first to take it from behind. Horsley has also done it in this way.

Tiffany has operated twice in the head for intractable neuralgia. Both cases had been operated on before and one several times. In one case excision of the upper jaw nerve had been done. In the first case, which was a woman, he went through the side of the head, raised up the dura mater until he arrived at the middle division of the fifth, put a string around it so as not to lose it, then scraped back the dura with a dental instrument which he had slightly dulled, and brought the ganglion into sight. It was a novel sight to him to see the Gasserian ganglion exposed to view in a living person. The lower division of the fifth nerve sends a motor branch to the muscles of mastication and in operating it is very hard to leave this motor branch untouched. When the head is first opened the brain swells up and fills the entire space, and it seems almost impossible to get at the nerve, but when the shock came on, in this case the brain shrunk and got smaller, and made operating possible. He did not pour cerebro-spinal fluid or blood into the head as had been recommended, and he did not suture the bone but the fascia. He wounded the dura but no harm came of it. The patient got well with no elevation of temperature. There was at first entire anæsthesia of the parts supplied by the middle and upper branches of the nerve, but there was no paralysis at all and pain ceased from the time she went under the anæsthetic and she had no suffering at all. For two days the dressings were soaked with cerebro-spinal fluid from the wound but he took off the dressings and took out the wire on the third day and everything was healed. The patient has been kept under observation for some time after operation, and she has had no relapses.—*Am. Med. Ass. Journal.*

POPULAR DENTAL EDUCATION.

By L. L. Barber, D.D.S., Toledo, O.

We all know how divided the profession is to-day upon the subject "Popular Dental Education." However, each one should have his or her opinion upon the subject—at least I have mine. That the masses should be better informed upon the general laws pertaining to the care of the mouth and teeth in their normal condition, is a fact that no one of us will dispute ; so is it an undisputed fact that they should deem it their duty to employ such means as will best and longest retain the mouth in a healthy condition and the teeth best able to perform their work. The question is : how best can they be taught by the dental profession to attach as much importance to such matters as we think they ought.

There is one thing sure: as well might a man expect to fit his son for the pulpit by educating him in gambling and sporting houses, as for the dental profession to expect the masses to receive anything like a proper knowledge of the care of the mouth and teeth from the amount and kind of reading matter that they now get upon the subject. That which they get is at the best nothing more than the advertisement of some such man as we all know too many of, or some article written by a newspaper reporter, who, wishing to give the public a thing he knows they need and do not get from the dentists, does the best he can ; but oft times comes very far from the mark. But how shall the proper kind of knowledge be disseminated ? Well, it is hard to say which is the best—but a great deal can be done in the following ways :—

Instruction at the chair : in this way much good can be accomplished. You must, however, use your own best judgment as to whom and what you say. But the proper instruction to the right person—you will find to be an excellent way. Another method best suited to the presentation of the subject would be by short, concise but simple articles on care, etc. of mouth and teeth in pamphlet form—written by a board or committee created for such purpose—then the distribution of the same by individual members. Also short newspaper articles written by proper persons and in such form as to make them a matter of general education. There are many of our magazines and widely circulated papers that would at all times be only too glad to publish properly written articles upon the subject of dentistry. Then talks at public evenings to be held at the dental meetings, would in my opinion, result in great good in this matter of educating the public. Then many papers can be read before the State Society that can be so written as to be of great value in this matter if published in the newspapers. Prepared reports of each dental meeting should be published in the newspapers—prepared reports—because the proceedings can by a proper committee appointed for the purpose be made very interesting and profitable reading for the public at large. By short concise but simple pamphlets written under the supervision of or by a committee appointed by the State Society for the purpose of setting out plainly the true A B C of right popular education. Then such reading matter can be distributed in such way as may seem best to the Society.

Dr. Catching, of Atlanta, Ga., suggests a plan that has been tried by him in the South ; that of talks to the teachers of all the public schools. Add to that the Teachers' Institutes as well. Papers read before any audience if made simple and to the point, giving such facts as the masses need, will be found interesting and usually what they want.

The profession should make it their business to in some way and some time have taught in every school the hygiene of mouth and care of teeth, for is this not quite, if not more essential than many things now taught.

The Ohio Dental Journal.

MASTICATION IN MAN.

By HANS BLOCK, Dresden, Germany.

Having arrived at what ought to be a clear idea of the masticating apparatus in its state of rest, we are now prepared to study how it comes into action.

"As long as the teeth occlude they resist efforts to move the jaw laterally, they interlock so as to hold one another firmly," says Dr. Dean. The jaw cannot even be brought forward without first pressing it downward (which is an interruption of the occlusion), because the front teeth of the upper jaw establishing a transverse horizontal occlusion prevent the lower ones from moving anteriorly. So we see that all movements of the jaw depend in the first place upon its previous depression; unless the jaw be first depressed, not the slightest anterior, lateral, or rotary movement is possible. This confirms what the study of the muscles showed us: that the main force is exerted from below upward; that is, raising the jaw results in the greatest pressure on the morsal surfaces as in motion in other directions (directly forward or sideways) much less force can be exerted.

It is plain that mastication requires that two grinding surfaces, as large as possible, be brought into contact as closely as possible by sufficient pressure. The contact of normal occlusion, as we have already seen, is the most immediate, but not the fullest one possible, as the arches overlap both inward and outward, those parts which overhang being naturally excluded from contact. To correct this and to achieve broad contact, the lower jaw, as the only part which can be moved, must be pushed laterally outward, so as to bring the teeth face to face. The outward excursion is, however, possible only on one side at a time, and while one side profits in getting a broad contact, the other side loses nearly all antagonism. As a consequence, "only one side can be used at the same instant" for mastication, as Dr. Bonwill says. This, however, does not mean that man is one-sided in his masticatory work, for healthy individuals will, by the instinctive law that all organs require exercise for their health, be induced to employ each half of the mouth alternately.

But mastication requires not only the broadest, but also the losest contact, and for the latter end the broad contact has to e abandoned to bring the jaw back in the next movement t the occluding position, which alone can give the final closest and fullest pressure.

The regular movements of mastication are comprised therefore, in three stages :

1. To drop the jaw downward and outward, to one side.

2. To bring it upward and outward on this side in the antagonizing position, to get the largest and most extensive surface available for the exertion of the preliminary pressure.

3. To pull the jaw laterally back into the occluding position for the exertion of a still closer and higher though less extensive final pressure

This shows that the motion of mastication requires hardly any forward excursions, and any one can convince himself that it is quite easy for him to grind food while his finger is pressed on the edge of the upper centrals in such a manner as to prevent the lower jaw from coming forward. Nevertheless as a rule, the jaw in grinding slides a little forward too, so as to have more opportunity for the exercise of pressure, and to give a rounded effect to the movements, whereby time is saved. This circle of movements is called the rotary grinding process which always involves only one side of the mouth at a time, as before noted. One fact is of importance. It is impossible to grind food on one side when the jaw is depressed to the other side and raised to the interior of that side outwardly ; for instance, food cannot be ground on the right side when the jaw is first dropped to the left and then raised upward and outward to the right side. The pressure must hence always come from the outside of the half on which the food is placed by the tongue, or it must at least, and occasionally does, come straight from below as in occlusion. Dr. Starr confirms this by saying, "The principal force of occlusion is exerted from without inwardly. The teeth strike in exactly the direction in which the greatest resistance is found in both jaws.

Dr. Black, Dr. Davenport, and an innumerable host of other eminent dental authorities have made the remark that the human teeth are fitted for tearing. It would be interesting to see this demonstrated by placing a napkin in a human mouth and exposing it to the tearing movements. These movements are only possible in dentures which have a carnivorous outfit. No human being can tear anything with his teeth. Dr. I. B. Davenport says, also, in one of his essays, "The masticating surfaces slide upon and into each other, constituting a self-sharpening machine." Let us examine this. Supposing the sharpening really takes place, then it must be conceded that those teeth which lose their antagonists are not sharpened any longer, and must become blunt, a circumstance which has hardly been on record yet. It has also to be proven that the enamel is either so thick that even by a lifetime's sharpening it can never be ground so far down that the dentine at last becomes exposed (provided such havoc is not brought about by caries), or else that it is constantly growing and replacing those layers which have been sharpened away. But the tissues of the teeth, it is taught, can never reproduce themselves. To say the morsal surfaces require constant sharpening would mean that either the teeth wear each other down (which they cannot do, as it is not the teeth that are ground, but the food) or that the normal food of man wears down the enamel. Let us see if the latter is possible. According to Hoppe, the hardness of the human enamel ranges in the fifth class of Moh's scale (that is, as hard as apatite), and according to Kopetsky, it ranges even in the seventh class (quartz). Now, the hardest substance which man eats is salt, which, however, represents the second class only of this scale, and it is therefore impossible that the normal food of man could ever mechanically wear out the human enamel. So we see that in fact the *normal* food of man does neither mechanically nor chemically attack the enamel, and hence there is no necessity for a sharpening of the teeth.

Somewhere else in his rich essay Dr. Davenport says, regarding the teeth, "Forces and resistances are evenly balanced." This is an admirable law, and if the doctor had recognized its full meaning he would have left aside the idea of the self-sharpening machine, because the oral apparatus is (like all works of nature) fitted for lifetime, and needs no repairs in healthy subjects. This law, like all basal truths, can be absorbed by higher laws, but never be refuted. The enamel would never be able "to balance" the invasive "forces" of the normal food (if there were any), as it has no other "resistive" power but its hardness, for it cannot reproduce itself nor can it continue its growth. Its density alone makes the enamel immune, and consequently healthy people have sound teeth, which are not worn down as long as they live. Dr. T. Dwight Ingersoll said in 1888, "The self-sharpening, chisel-shaped teeth of rodents are continually supplied with new tooth-substance as fast as the cutting-edge is worn away. Nothing like it is known in the human family."

Now to return to our object proper, two questions might be asked, viz., *Why do teeth have cusps and uneven surfaces? Could more uniform, safe, and rapid pressure not be exerted with smooth and even morsal surfaces?*

To this question we may answer,—

1. "The double crossing of the lines of division of the arches has the effect of binding the teeth into firmer contact in the arch.

2. "To afford the greatest amount of contact surface for the attrition of food."—*Dr. Davenport.*

3. "As the cusps wear down the lower jaw moves forward."—*Dr. Davenport.*

4. "Uneven surfaces cut and divide food better.—*Dr. Hazeltine.*

This does not mean (what point 2 says) that the active surface is enlarged, but that the food is placed at a disadvantage when it is pierced by cusps over other cusps into depressions. A further argument would be the point of beauty, and a sufficient explanation is contained in the process of formation, or rather evolution of the teeth. It will be remembered that in former times the molars were called "double teeth," a name which is in one sense accurate, for two bicuspids put together give the unmistakable appearance of the molar, and so are the bicuspids a fusion of the cuspids. In a word, nature has "doubled" the supportsto give more strength. A seventh argument is that the cusps serve as guides or dowels during motions to bring the jaw always exactly to the proper place.

The other question is, *Why do the lower molars have only two roots, and not three, as the upper?*

To this we may reply,—

1. It is a general mechanical law that where two parts strike each other the fixed part has to be the larger, the movable part the smaller or lighter one, as for example in anvil and hammer. The lower molars belonging to the movable lower jaw, are therefore supplied with only two roots.

2. As for æsthetic reasons the skull has to be tapering somewhat from vertex to base, so the lower jaw must appear

a little smaller than the upper. The lower arch hence runs inside the upper, and the lower three molars are together four mm. or individually one and one-half to three mm. narrower (on each side of the jaw) bucco-lingually, but four mm. broader (mesio-distally) than the upper three molars. It being necessary to arrange corresponding to this contour of their crowns the roots of the lower three molars, so it is that in the lower jaw the crowns, which are broad but not wide or thick, are supported by two broad roots, and the additional root which has to support the width or thickness is only to be found in the upper three molars, which are wide or thick, but not broad.

3. A glance at the anatomical investment shows that all the lower molars got a compensation for the one root less which they have by the increase of strength which the lower jaw affords to them by its two ridges, the mylo-hyodian or internal oblique line on the inside and the external obliqueline on the outside of the roots of the molars. Even apart from these ridges is it known that "the alveolar walls of the upper teeth are generally thinner than those of the lower," as Dr. Harris says. Dr. Black also says upon this point, "In the lower jaw the substance of the bone is more compact and stronger than in the upper; especially about the molar teeth, where the alveoli are in the substance of the body of the bone." The investment is hence stronger for three reasons: The alveoli are generally stronger in the lower jaw, the bone is thickened by two ridges, and the roots are put down in the body of the bone itself.

4. On the other hand it is evident that a special provision had to be made on the part of the upper molars against the vibrations and the pressure coming from the blows of mastication. We have seen that these blows come constantly in one direction only, and that is from without inwardly. This made it necessary to anchor the tooth by a special inner (lingual) root to prevent any displacement. So we find the axis of the upper lingual extra root just in line with the direction of the greatest force from the motions of mastication and there can be no doubt that the third root has and answers the purpose of increasing the firmness of the upper teeth.

5. Moreover, the lower jaw or the moving part does not suffer so much from the concussions of mastication, as it can always slightly recede or rebound at the moment when the impact occurs, whereas the fixed upper jaw has no means to avoid or to diminish these shocks.

6. The upper molars had to be fastened in a more secure manner, as they uninterruptedly have "to work" against gravity, whereas the lower molars could not fall out of the jaw even if they were loose, because in their case the operation of gravity is reversed.

7. "The roots of the upper molars are round and slender, those of the lower are broad," says Dr. Parreidt. The disadvantage of the absence of the third root is therefore partly balanced by the stouter and more massive construction of the two roots which support the lower molars. Had these teeth been supplied with three roots, then a divergence in their direction would have been unavoidable, as it is a mechanical law that the best and safest foundation by three bases can only be afforded when they are placed in a (equilateral) triangular arrangement. To bring the third base in the same line as the other two would be a nearly useless, unpractical thing, for it is better to make (out of the same mass) two bases in one line instead of three in a line. Having ascertained this plain rule we can easily understand why nature preferred to make (out of the same bulk of root material) two thick roots in one (alveolar) line instead of three in a triangle, for, as we have seen, the arrangement of three in one line is out of the question. The arrangement of three roots in a triangle (as in the upper jaw) would moreover, have involved the disadvantage for the lower jaw that in case of extraction fracture of the bone would have occurred much easier than it can occur from the extraction of a tooth with two hardly diverging roots which are arranged in a line. This may explain sufficiently why out of the same amount of root-substance these two roots were made which afford the same safety of anchorage, as they are slanted in the direction in which the greatest resistance is required.

The criteria which characterize the apparatus of mastication in man, in contradistinction to nearly all lower animals, may be collected together as follows:

1. The evidence of a certain coincidence in the developement of the human teeth and brain, which are alike nourished by the common carotid artery,—viz., the most rapid increase in the growth of the brain falls within the first seven years of childhood, at which age, simultaneously with the eruption of the first permanent teeth, the brain enters the stage of consolidation. At fourteen years the growth of the brain is nearly completed, and its further increase is restricted to the

cerebellum, just as the denture is complete at fourteen years excepting the last posterior teeth, and by twenty-one years brain and denture reach the stage of full capacity and complete function. The development of the teeth is accompanied by marked physical disturbances, that of the brain by psychical. That the seventh year represents the really correct time of normal beginning of second dentition is also supported by the following authorities: Dr. Patrick, who consulted about seven of the best dental anatomies, says in his paper, "The first of the permanent set appears at seven years." John Tomes, in his "System of Dental Surgery," states that at the age of six years and five months the first permanent molars have cut the gum, and that at seven years they are on a level with the temporary teeth. Erasmus Wilson, in his "System of Human Anatomy" (1858), says, "The period of appearance for the first permanent molar is at six and a half years,"—that is, during the seventh year.

2. The similarity in form and between corresponding diameters of heart and maxillary cavity, though under the exciting influences of modern life the heart rarely conforms to the standard heart, and this seems to be reflected in the shape of the jaw, which also rarely harmonizes with the jaw of the "standard face."

3. The semi-circular curvature of the front part of the arches, which seems to be indicative of the shape of the trunk. In this respect it would be interesting to investigate whether there is any parallelism between the dental and pectoral and pelvic arches in the different species and classes of animal.

4. The tripod arrangement of the jaw and the conspicuous tendency to constant relations between jaw and skull.

5. The relative smallness of the interstices of the teeth.

6. The unfitness of the human dental organs for attack or defence.

7. The roundness of the cusps and absence of sectorials.

8. The individuality of the teeth in expression of temperament, character, race, morbidity, etc.

9. The approximal contact. Though some naturalists assert that the Anoplotherium, a fossil pachyderm, possesses in common with man an uninterrupted arch of teeth, as long as dentists have not endorsed this as a fact it is questionable if in this animal's denture there is really approximal contact all round the arch as in man.

10. The overbite of the incisors. In other animals the incisors bite edge to edge.

11. The curved plane of articulation and the mesial slant of all teeth.

12. The conformity of all teeth in length and symmetrical arrangement.

13. The remarkable translucency, owing to the high degree of organic crystallization.

14. The variableness of the rugæ of the palate.

15. "In the upper permanent molars (and the second deciduous molars, both above and below) the 'bicuspid' cusp (*i.e.*, the anteropalatal) tends to extend obliquely across the tooth to join a corresponding prolongation of the 'molar' cusp (*i.e.*, the postero-buccal cusp). This forms a ridge which is characteristic of the human molar."—*Dr. Allen.*

The Dental Cosmos.

CHLORIDE OF ETHYL.—I find chloride of ethyl especially useful as an obtundent when cutting sensitive teeth. With a piece of dam large enough to cover the nose and extending down over the mouth, isolate the tooth, as it is important to prevent the inhalation of the ethyl chloride, for it is a general anæsthetic, and one whose properties are little known. Now break off the lip of the glass tube containing the liquid, and direct the stream that gushes from the capillary tube on the tooth to be operated on. In thirty or forty seconds its rapid evaporation will lower the temperature of the tooth sufficiently to make excavating painless.

In such operations I have my engine in position and everything ready to complete the excavating in as short a time as possible, as the local anæsthesia will soon pass away.

I have also used this successfully for the painless extraction of teeth.

Edward Eggleston.

A CURIOUS DENTAL CASE.—A Burnley dentist has been mulct in fifty pounds damages, for the extraction of the whole of the teeth of a married woman. She only asked him to extract one tooth. She testified that previous to the operation she could eat a crust or pick a bone with anyone.

Dental News.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

During the July sittings of the Examiners, the following candidates passed the First Professional Examination for the Licence in Dental Surgery:—Lilian Murray, London; James Coltman, Newcastle-on-Tyne; Thomas Roger Haggarty, Newcastle-on-Tyne; Theodore Stancombe Rendall, Torquay; Arthur Heron, Edinburgh, and Thomas Saunders Robertson, Kirkcaldy; and the following candidates passed the Final Examination and were admitted L.D.S. Edinburgh:—George James Goldie, Portobello; Henry Theodore Dreschfeld, Manchester; Francis Herbert Hallen, Calcutta; Charles John Luya, Liverpool; George Arnold Wood, Dumfries; Daniel Walter Parsons, Liverpool; Joseph Vincent Coogan, Seville; Alexander Henderson Bain, Galashiels; Henry Perkin, Dewsbury, Yorkshire; and Claude Henry Ashford, Plymouth.

DENTAL BOARD OF EXAMINERS, LAUNCESTON, TASMANIA.

The following are the questions at the last Examination for the Dental Licence:—

Pathology.

1. Enumerate and explain the conditions of healthy nutrition. Give examples.
2. What are the cardinal symptoms of inflammation? Give a short description of their causation.
3. Describe the process of organization.
4. What is caries? What is necrosis? Describe them briefly.
5. Name and describe the anatomical and microscopical characters of tumours of the jaws.

Surgery and Pathology.

1. Describe the symptoms and treatment of abscess of the antrum.

2. Give the locality, cause, and treatment of alveolar abscesses; where may they terminate?

3. Describe the operation necessary to remove a tumour from the lower jaw.

4. What are the varieties of ulcer of the tongue, their causes and treatment.

The following are some of the *viva voce* questions:—

1. What is a ranula, where situated, what are its contents, and what is its treatment?

2. What is an epulis, how many kinds are there, and what treatment would you adopt for its cure?

3. What would your treatment be of an ulcer of the tongue caused by the ragged edge of a tooth?

4. How would you treat a fracture of the lower jaw?

5. Name the different ulcers of the tongue.

6. What are the causes of necrosis of the lower jaw?

7. What would you do in the case of an overdose of chloroform during its administration?

8. Give the symptoms and treatment of dislocation of the lower jaw.

Dental Surgery and Pathology.

1. How would you diagnose idiopathic neuralgia from that caused by a carious tooth?

2. State the pathological changes which occur in the pulp as the result of inflammation.

3. What is antral abscess, how does it occur in connection with a tooth, and what is the treatment?

4. Suppose a woman, aged about 22, came to you complaining of pains in the neck and arm, with difficulty in opening her mouth, what would be your diagnosis and treatment?

5. What is periostitis? Give diagnosis and treatment.

6. Describe briefly the pathology of exostosis, and state how you would treat a case.

Some *viva voce* questions on the same:—

1. What is dental caries, its causes, symptoms, and treatment.

2. How would you treat a case of exposed pulp, by caries or otherwise?

3. Describe the operation for capping and destruction of the pulp; mention the materials and agents used.

4. Under what circumstances would you drill into the pulp cavity?

5. What escharotic would you use for destroying the pulp?

6. What symptoms, local and general, would lead you to diagnose between inflammation of the pulp and inflammation of the investing membrane of the root or roots?

7. How would you treat a fungus granulation of the tooth pulp?

8. What is periostitis? Give diagnosis and treatment.

9. How would you pivot a central incisor tooth? Mention the steps in the operation, conditions that may arise, and the treatment of those conditions.

10. When is pivoting contra-indicated?

11. Describe the operation of tooth extraction; mention the different stages in the operation for incisors, canines, bicuspids, molars, and wisdom teeth in each jaw. What are the accidents most likely to occur, and how would you proceed under the circumstances?

12. Name the materials most commonly used for fillng teeth. What pathological conditions would influence you in the choice of gold amalgam, oxy-chloride of zinc, and gutta-percha. Describe briefly how you would use them.

Dental Materia Medica and Therapeutics.

1. What is nitrous oxide gas, and how is it made?

2. Name the different medicinal agents used for application to exposed pulps, giving their therapeutic effects.

3. Write prescriptions for (1) an alkali aromatic tooth powder, and (2) an astringent gargle for the mouth.

4. Enumerate the various deodorisers, disinfectants, and germicides in general use in dental surgery, in what strength and under what conditions would you severally employ them?

5. Mention the different anæsthetics, both local and general, most commonly used during dental operations.

6. What accidents are likely to occur during the administration of nitrous oxide gas? Describe the means you would adopt to counteract their effects.

Mechanical Dentistry Paper.

1. Mention the various modes of securing artificial teeth, discussing their advantages and disadvantages. What circumstances favour or impede atmospheric adhesion?

2. Supposing the palate of a gold and vulcanite denture is cracked, how would you repair it?

3. Mention those pathological conditions of the parts concerned, which would, in your opinion, contra-indicate the application of a pivot tooth, crowning or bridge work.

4. Name the different materials commonly used in the construction of bases for artificial teeth, the qualities peculiar to each, together with the cases for which they are specially suited.

5. Describe shortly the method you would adopt in constructing an obturator for simple cleft palate.

6. How would you take an impression in Plaster of Paris of a lower jaw in which all the double teeth were absent while the incisors and canines remained standing?

THE ACTION AGAINST A DENTIST IN MANCHESTER.

Judge Heywood awarded a plaintiff £15 damages for personal injury alleged to have been caused by the negligence and want of skill of the defendant's assistant. The evidence went to show that the defendant's gum was severely lacerated, that in the middle of the night hæmorrhage supervened, and that a portion of the tooth was not extracted. All these things might have happened without any fault attaching to the operator. The evidence was not altogether satisfactory, because no dentist was called to give evidence on behalf of the defendant. Serious hæmorrhage after tooth extraction has been recorded on many occasions, and a judge would hardly mulct a dentist of £15 damages for what might be due to constitutional causes. The assistant who performed the operation was in court, but was not called. It is possible he is unregistered, and that his chief feared an *expose* both for his practice and himself, because, if unregistered, the assistant might be prosecuted for obtaining money under false pretences, while the chief himself might be dealt with by the General Medical Council for covering an unregistered practitioner.

British Medical Journal.

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester during the month of July, 1893.

Number of Patients attended	921
Number of Extractions	594
Number of Extractions under Anæsthetics	148
Gold Stoppings	55
Other Stoppings	158
Miscellaneous {advice, temporary fillings, scalings, dressings, &c.	284
Crowns	7
Irregularities	10
Total	1256

J. C. LINGFORD, L.D.S. Eng., *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

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ON DEFORMITIES OF THE JAWS AND DENTAL IRREGULARITIES IN THOSE THE SUBJECTS OF NASAL AND PHARYNGEAL LYMPHOID OBSTRUCTIONS.*

By WILLIAM HILL, M.D. Lond.

Sir James Paget, thirty-five years ago, wrote :—" There is a physiognomy by which children and young people that have simple enlargement of the tonsils may usually be known at once. Together with a general appearance of feeble health they have a peculiar shape of the mouth and jaws. The jaws are narrow, so that the teeth are crowded and look disproportionately large. The aperture of the mouth is small, habitually slightly open............The general expression is that of a gradual narrowing and a smooth uniform rounding of the lower part of the face, which makes it look small and featureless. These peculiarities of shape appear due partly to defective growth of the jaws, and partly to the habit which the patients have of advancing the lower jaw and tongue into the position in which these parts are more evidently held during acute inflammation of the tonsils."

E. Wagner, in 1875, went a step further by drawing attention to the association between adenoid growths of the nasopharynx (hyperplasia of Luschka's Tonsil) and deformities of the maxillæ.

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* An abbreviated report of an Address delivered to the Students' Society, National Dental Hospital

A year later, Michel, of Cologne, corroborating Wagner's observations, remarked that the roof of the mouth is often pointed and high arched, and that the front teeth project in moderate hypertrophy of the pharyngeal, or Luschka's, tonsil. Michel believed the high vault due to want of expansion of of the nasal cavities from abeyance of the nasal respiratory function.

David, in 1883, suggested that in mouth-breathers with nasopharyngeal obstructions, the palate, in course of development, is pushed upwards and vaulted by reason of the greater air pressure on the buccal, than on its nasal surface. This explanation seems inadequate, because the nasal passages are very rarely completely blocked.

Tomes, noting the association of mouth-breathing with contracted V-shaped and saddle-shaped maxillæ, pointed out that the lateral pressure on the alveolar processes caused by the 'dropped mandible,' acting through the buccinators and tissues of the cheek is at least *one* factor in the production of the narrow dental arch.

In a paper read before this Society in 1890, I pointed out that there were probably many factors concerned in the normal expansion and growth of the jaws, but I urged that a rhino-pharyngeal lymphoid obstruction to normal respiration was often a prominent retarding factor.

Heredity, artificial selection, racial peculiarities, civilization, diet, trigeminal and other nerve influence, thumb-sucking, exanthematous fevers, tubercular diathesis, and traumatism, singly or more or less in combination, are doubtless also concerned in the production of maxillary and mandibular stuntings and in irregularities of the dental arch, but with those influences I am not now dealing.

Some stress is rightly laid in the Dental Text-Books on the influence of the sphenoid or wedge-bone in the development and expansion of the cranial, maxillary and other bones. This subject was first elucidated by Hilton. Any factor, hereditary or otherwise, which retards and diminishes the growth and expansion of the wedge must tend to maxillary stunting, and, therefore, to small choanæ and narrow contracted jaws. The fact that the growth of the body of the sphenoid and the expansion of its cavity or sinus is important in pushing down the vomer and so lowering the level of the palate is very suggestive ; it must be remembered that the formation and expansion of the accessory nasal sinuses takes place largely during the period of eruption of the permanent teeth, i.e., during the period of life when nasopharyngeal adenoid growths and enlarged faucial tonsils are commonly met with, but it is difficult at first sight to *explain why* these lymphoid hypertrophies should retard the expansion of the facial air sinuses.

Spicer has adopted the view, first put forth by Michel in 1876, that the nasal accessory air sinuses are small because the rhino-pharyngeal obstructions lead to abeyance of normal nasal respiration and of the stimulus of functional activity in the mouth breather. I do not think, however, that the theory of functional disuse is competent to explain the retention of the infantile condition of such a bone as the mandible which is often deformed in mouth breathers quite as much as the facial bones. It seems to me that the retention of the infantile characteristics of the facial bones is in association with too early ossification, and if this view is correct, we have to look about for some cause of this early ossification. I think it must be admitted that this condition obtains very frequently in those the subject of hyperplasia of the faucial and naso-pharyngeal tonsils. It must be remembered that these tonsils receive the lymphatics of the nose and its surrounding bones, and when they are thickened and enlarged there is impeded flow of lymph through them with consequent congestion and lymph stasis in the adjacent sphenoid, maxillary, and mandibular bones ; this lymph stasis would appear to lead to local hyper-nutrition and early ossification, the bones and sinuses retaining more or less their infantile characteristics.

The effect of the tongue in the prevention of deformities of the palate and dental arch, appears to have been curiously overlooked ; there is no doubt that the normal position of the tongue with the mouth closed is with that organ lying against the hard palate : so placed it cannot but affect the shape of the growing palate, tending to flatten it out, and preventing such contraction of the alveolar processes as is seen in the saddle-shaped and V-shaped maxilla and vaulted roof.

On the other hand the effect of the lateral pressure of the normally placed tongue and lips in correcting *irregularities* of the permanent teeth is well known. During mouth breathing from whatever cause the expanding force of the tongue is in abeyance, the upper lip is raised and allows the incisor teeth to protrude, and the weight of the dropped lower jaw, pulling through the buccinator muscles and tissues of the cheeks acts as a lateral compressing force causing maxilliary contraction especially in the neighbourhood of the bicuspids.

The influence of adenoid growths, enlarged tonsils, and coincident mouth breathing in the productions of dental irregularities is now becoming so generally recognized, that I know of several instances where the dental surgeon has rightly insisted on the cure of the nasal and pharyngeal condition before attempting to "regulate".

DENTAL ELECTRICAL APPLIANCES.*

By A. R. Cooke, D.D.S., Syracuse, N.Y.

In presenting this brief paper it is not my purpose to enter upon the discussion of electrical theories, or of the relative value of special electrical systems as supplied by the manufacturers.

A few words, however, upon the use and maintenance of of such appliances as have proved of practical value in every day work may not be amiss; and if, perchance, an idea may be given of the great assistance to be derived in the rather tedious parts of our practice, that others may receive the same benefit as the writer, I shall feel myself well repaid for this effort. First as to the sources of electricity. I would designate five as being of practical value, and of importance in inverse order as named :—

1. The Voltaic Battery; 2. Storage Batteries; 3. The Arc Current; 4. Alternating Incandescent; 5. Edison Incandescent Current.

You have all had experience with primary batteries, and know too well their faults.

Constant care and expense attend their use, and just when needed they are sure to be out of order. For such uses as annunciators, bells, &c., they are all that can be desired. The various open circuit batteries, of which the Leclanche may be taken as the type, do excellent service, and require little attention, but for our use more constant batteries must be had, which, of course, involve care and frequent renewal of parts.

The secondary or storage battery, even in its present imperfect form, fills a place intermediate between the primary battery and dynamo currents. In places where the electric light currents can be had only at night, they prove a very satisfactory source of supply, being readily recharged any night. They may also be taken to some dynamo and there recharged. If this cannot be readily done, keep a number of cells of primary battery in constant connection.

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* Read before the Fifth District Dental Society of the State of New York.

The Arc current is suitable only for running motors, which should be placed at a distance from the chair, and where they may not be handled. Owing to the intensity and nature of the circuit it cannot be reduced for other appliances. Alternating incandescent currents may perhaps be found more generally distributed than others, and have many good features.

They are easily reduced by transformers and rheostats from the high tension current of the main line to any strength desired, and are safe to handle in any place about the office. Motors have recently been introduced for this circuit which promise good results, though consuming considerable current which is generally metred and paid for by the 1,000, making this perhaps a little more expensive for motor use than the Arc circuit. This current is suitable for motor, incandescent lamp, mouth illuminator, mouth mirror and cautery. Owing to the alternations it cannot be used for the electric mallet or for therapeutic applications.

The Edison incandescent current is supplied at a voltage of 110, and is easily reduced by means of lamps or rheostat run in series with other appliances. This is the ideal current for dental use, and will be found suitable for any and all dental appliances.

Like the alternating, it may be metered and paid for accordingly. The motors for this system are certainly the most economical in their output and their regularity. Unfortunately many places have no such current in the streets. The system seems better suited to isolated plants. Many years ago the Faradic current was introduced for the painless extraction of teeth. The ordinary Faradic apparatus, consisting of a small induction coil interrupter and battery was used by placing one electrode in the hand of the patient, connecting the opposite pole with the forceps. The resulting shock upon the application to the tooth was supposed to render the operation painless. Certainly with the current of sufficient power, the poor victim would be quite as much interested in the electrical phenomena as in the operation. Like other fads it had its day, and anæsthetics have well supplied its place. The Bonwill Electric Mallet has many strong advocates, and is without doubt one of the most perfect condensers of cohesive foil. Despite the tendency to return to soft, or perhaps more properly speaking semi-cohesive foil, there are places where we must use the much abused cohesive form. It is in these cases of large contour fillings that the electric mallet will be found best suited. Much of the opposition has been on account of the battery, but with the Edison current and storage battery, I think it will find more favour. Dr. J. Foster Flagg first proposed the use of the electric cautery for sensitive dentine about 1875. It has since been used with satisfaction as a substitute for heated burnishers in the treatment of sensitive dentine upon the cutting and grinding surfaces of the teeth.

Minor surgical operations about the mouth are very nicely accomplished by the use of suitable points as supplied to the general surgeon.

Fungous growths of gum and small tumours when thus removed present no trouble from hæmorrhage.

The storage system, or either of the incandescent currents in connection with suitable resistance will supply the necessary current. Incandescent lamps form an important adjunct to the office outfit, especially when we are otherwise compelled to postpone an operation for fear of not being able to finish it before dark.

A limited experience with the incandescent lamp run in series with a five candle lamp for mouth illumination has proved quite satisfactory. The position of the arm attachment as supplied by the S. S. White Manufacturing Co., may seem in the way, but with proper adjustment and a little practice this objection is readily overcome.

The 32-candle lamp run in series reduces the voltage to the capacity of the 5-candle lamp, and at the same time illuminates the operating room. I consider this a practical arrangement, and of value to one whose time is well filled.

The electric mouth lamp, or mirror for examinations, has its advocates, but I have not found it of sufficient practical value to warrant the expenditure. In diagnosis of devitalized pulps, it may be very convenient occasionally, as well as for the examination of cavities in the posterior part of the mouth. Electric water-warmers, in combination with other apparatus, have been proposed perhaps more as a novelty than as a practical thing. The electric motor has proved the most practical and important of all the electrical appliances that have been introduced to the dental profession. A continued use for some years past has so thoroughly convinced me of its value that I should not willingly return to the old foot power. It is used to run dental engines, lathes, fans, or any mechanical contrivance one may use, and is wound for all kinds of currents.

A one-eighth horse power motor is large enough to run a dental engine and grinding lathe. For the engine alone one-twelfth or one-sixteenth horse power may prove sufficient, though I do not think it economy to purchase too small a machine. They have short bearings, and much sooner become worn, and needing repairs, than the larger.

Motors wound for the Edison system are preferred where they can be run. Very little attention is required to keep the machine in order. Bearings must be well oiled, and the commutator kept bright by an occasional polishing with crocus cloth. Never use emery in any form. It soon becomes impeded in the soft copper and cuts out the brushes. One with limited mechanical and electrical knowledge should certainly have no trouble in their management.

Why then are they not more generally used?

Their cost has, I fear, deterred many from purchasing. Our Dental Journals are filled with beautiful illustrations of complicated apparatus and fine office fixtures in this line, with prices ranging up to 245 dols.

Is this expense necessary?

Most assuredly not. You will pardon me if I outline a plan for the introduction of a one-eighth horse motor upon the Arc system to run both laboratory, lathe, and dental engine at an expenditure of 35 to 40 dols. net. First. Purchase one-eighth horse motor at 30 dols., placing it upon a shelf in the laboratory over your grinding lathe. Second. Utilize your present engine head, if in good repair, by unscrewing the standard at the lower joint, having a dowell fitted to screw it upon the standard of the S. S. White combination dental chair attachment in place of the round headed nut supporting the glass holder. You now have motor and engine in place. Third. Go to your hardware dealer and purchase 3 double awning pulley blocks having space for two pulleys of about 1 or 1¼ in. diameter; one 3lb. window weight; two heavy screw hooks; and three small brass Pulleys. Any good machinist will be glad to turn up hard rubber steel bushed pulleys with deep groove in the edge to fit the frames you have bought. Fourth. Put one screw hook on the ceiling over the pulley head of your engine, and the other over the pulley of your motor, and hang up your pulleys. Fifth. A heavy twisted linen fish line for belt is now to be passed from the motor to the ceiling pulley—along the ceiling to the other pulley—down to your engine head and back to the start, where both ends are passed through the third pulley and then spliced, if you know how, or nicely sewed if you do not. Hang on your counter weight, and though your engine falls with the chair your belt is always taut.

How shall we start the thing?

A little more fish line is passed from the starting end of your motor to the ceiling, and over one of those brass pulleys thence to the other pulley over the chair down to the floor. Utilize the clamping lever of your chair as a means of drawing up the cord when the engine is to be used, and you have the whole thing complete. Your motor starts with a slight pressure of the foot, and the friction of the clamp holds it in place. More speed is had by carrying the lever a little farther on, and a stop by pushing the other way. You have no troublesome switchboard under feet, no noise from your motor, no danger to yourself or patient, and your pocket-book is not as flat as though you had paid 165 dols. for a similar arrangement. This should give you six speeds for your engine varying from 1000 to 4000 per minute. You can reverse the motion by simply taking the belt from the engine head and giving a half turn.

Should you prefer a suspension engine, as I do, your counter-weight must be of the same weight in order to counter-balance the hand-piece. This engine has many good points. I think that it will run smoother and require less repairs than any other. It is very small, and when not in use is thrown up out of the way.

THE TREATMENT OF TEETH DURING PREGNANCY.*

By G. N. Skipp, L.D.S. Eng.

It is now generally admitted that a considerable change for the worse takes place in the mouth during pregnancy, which is said to be due to constitutional disturbances and the alteration in the normal constituents of the saliva and oral secretions.

It is not my intention to discuss the physiological action of pregnancy on the teeth through the medium of dental pulp and dental tubuli, but rather the external chemical action produced on them by the fluid of the mouth, and the treatment thereof.

I purpose noticing the change in the oral secretions, their effects upon the teeth, and temporary filling.

In those cases where pregnancy has any marked action on the teeth we find that it is usually during the *first few months of the first pregnancy* that the oral secretions become so altered, although this is not always the case as it may be put off till the later months, or even deferred till subsequent pregnancies.

When such a condition does occur, we find that the saliva has increased in quantity with an acid reaction ; cases being recorded where the flow of saliva has been so great as to imitate Mercurial Ptyalism, which may be owing to irritation of the second and third branches of the fifth pair of nerves, and direct stimulation by acid eructations.

Among the causes of this extra acid condition of the saliva may be mentioned as the three most important :—

1. General disturbance of the digestive organs.

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* Read before the Manchester Odontological Society.

II. Fermentation with the buccal mucus, which has also increased both in quantity and fermentative matter, and particles of food left between the teeth, forming lactic and other acids.

III. Acid eructations from the stomach.

Morning sickness is looked upon by some as a most reliable sign of their pregnancy, previous to which there is an acid taste in the mouth upon awaking. The vomited matter is of a white frothy consistency, and so acrid that as soon as it reaches the palate it produces violent retching. This acid vomit has a direct action upon the teeth, rendering them unpleasantly rough, and should there be any superficial caries or facets on their crowns they become very sore during mastication and for some hours after.

Where decay has attacked the teeth to a greater extent, considerable pain is sometimes caused, and patients are glad to plug the teeth with cotton wool in order that the vomit may pass over rather than remain in them.

The important changes in the oral secretions then, are :—

I. The saliva has become more acid, which is readily seen by applying litmus paper to the mouth of a patient who is pregnant.

II. The acid saliva has increased both in quantity and fermentive principles.

It is not an uncommon remark for patients to make on learning that the number of fillings required are greatly in excess of what they anticipated:—" I can't understand it, I never had toothache till I was married and then all my teeth seemed to go ;" or again, some say, " My teeth never decayed till I was married, and went to live at such and such a place." Not unfrequently the water is blamed, as containing too much iron or being too soft. In most cases, however, the rapid decay which is put down to the water or the change of residence may be easily traced to the causes just enumerated.

In an interesting paper read before this Society our President told us that after forty years experience he had come to the conclusion that there was no such thing as either tic douloureux or neuralgia, and that both were either toothache or jaw-ache. I wish some of our medical friends would accept that view, whether it be right or wrong, and send toothache patients to their dentists, instead of treating them to delicious decoctions for the cure of a supposed "neuralgia arising from pregnancy." Many useful teeth might then be saved that otherwise fall victims to want of attention, substituted by a little quinine and iron mixed with a good deal of patience and long suffering.

Although I know of no special form of caries characteristic of pregnancy, there are three kinds of decay which seem more prevalent at this period, and are noted for the rapidity with which they do their work.

1st.—The *brown* decay in which the surface and margins of the cavity are black; but extending beneath the enamel, and often visible through it, lies a quantity of dark brown softened dentine. This decay attacks the crowns and approximal surfaces of molars and bicuspids, the extent of its ravages depending upon the condition of the fluids of the mouth and the strength of the tooth.

If the tooth structure be well calcified, the area of decay may be limited, seeming merely to bore deeply into the substance of the tooth in the direction of the nerve, which may become exposed, although comparatively little of the tooth has been destroyed.

I remember filling a lady's tooth in this state six weeks after the birth of her first child,and not wishing, as I thought, to come upon the nerve, determined to leave some of the discoloured dentine behind, and after applying creosote and varnishing, the cavity was filled with Weston's cement. The patient returned next morning, having suffered pain during the night, and on removing the filling it was found that a good deal more softened dentine was left than at first supposed, and a fine probe passed easily through into the pulp cavity.

If, on the other hand, the tooth structure is poor and imperfectly calcified, the condition is far more serious. Although the decay may at first sight appear merely a small fissure cavity, as soon as it passes the enamel it travels beneath the entire surface, extending upwards to the top of the cusps and downward to the neck of the tooth,—in fact, infecting the whole tooth above the gum. The colour of the dentine, dark brown to begin with, soon shades off to a pale yellow or straw colour and from that to white, with the layer in immediate contact with the enamel, reduced to a chalky powder. When the tooth is sufficiently excavated to receive a filling nothing but a thin shell of enamel remains.

2nd.—The next form of decay which we find is where a general softening of the tooth takes place without much loss of tissue. The colour remains dark brown all through, and starting from the neck of the tooth on its labial surface, passes round upwards and downwards beneath the enamel and below the gum, which becomes congested and excretes an acrid matter, resembling in odour that of an exposed nerve. The dentine being exceedingly sensitive, both to thermal changes and pressure of the cutting instrument, nitrate of silver is an excellent application for reducing sensitiveness in these cases. The teeth usually affected are lower molars, bicuspids, and upper canines. I have seen a case where an isolated lower bicuspid was considerably raised in its socket from want of antagonism. The decay had passed entirely round the tooth, leaving the enamel comparatively uninjured to the sight, but on cutting it was found to be disintegrated, the whole body of dentine being so softened that a sharp probe might easily have been passed through to the pulp. As the tooth was not giving trouble I dosed it with nitrate of silver and left it to its fate.

3rd.—A form of erosion is sometimes present which does not bring about actual caries, but a slight softening with extreme sensitiveness at the necks of the teeth, and facetted points where the enamel is worn away, on the crowns of molars, cutting edges of incisors, &c. To patients wearing artificial teeth this is a great source of trouble. They are unable to bear the slightest pressure from clasps, &c. near the gum edge, and mastication of anything at all solid is a matter of some difficulty. Green tartar or discolouration round the necks of the teeth is associated with the condition of pregnancy, and more so if the patient is of a phlegmatic temperament, when the buccal mucus is secreted in greater abundance —a peculiar sour odour of the breath being also noticed in these patients (who as a rule are not particularly clean in regard to their teeth) and which may be attributed to fermentation. As a remedy I would suggest keeping the teeth well brushed (especially after eating) with a powder containing soap.

Filling the teeth with metallic filling is not as a rule found to be successful in these cases, cavities carefully cut and filled with amalgam having in a short time developed caries at the edges, especially in approximal cavities of bicuspids, where food has a tendency to lodge.

Osteo fillings disappear like magic, while gutta-percha seems the most useful, being non-irritant, a bad conductor of heat and cold, and not acted upon by acids. It also requires less of the tooth's substance to be cut away to give a firm anchorage, and it is easily removed when a more permanent material can be used.

Jacob's and Hill's preparations are most suitable for this purpose. In accessible cavities, where moisture can be excluded, Jacob's is the best. After drying the cavity thoroughly with absolute alcohol, the gutta-percha is packed in the usual way.

In difficult cavities at the back at the mouth, and in any wet mouth, this is no easy matter, but may be successfully accomplished in the following manner. After excavating the cavity, a piece of Hill's gutta-percha sufficient to nearly fill the cavity is warmed and kneaded between finger and thumb with enough oil of eucalyptus to reduce it to the consistency of thick putty. The cavity is now dried and wiped out with a piece of cotton just moistened with the same oil, and the prepared gutta-percha is then pressed in as quickly as possible with a *cold* instrument. Jacob's gutta-percha may now be pushed in with a warm instrument to bring the filling flush with the edges of the cavity and finished off with chloroform.

The oil of eucalyptus, although a solvent of gutta-percha, evaporates in twenty-four hours and leaves it unimpaired.

Some difficulty is experienced where the gum at the cervical edge bleeds or exudes moisture. This may be obviated by placing over it a small piece of tissue paper saturated in nitrate of silver, and filling the cavity tightly with cotton wool for about ten minutes. On removing the cotton, the tissue paper will adhere to the gum and prevent further trouble, being in turn removed when the filling is finished.

In foul mouths a little iodoform may, if the patient does not object to the smell, with advantage be added in the process of kneading the gutta percha, but as a rule the antiseptic properties of the eucalyptus are all that is required.

In those cases where the teeth are attacked with the white decay, and it is necessary to give a more solid and unyielding support, the plan adopted is to remove all decay, as far as possible without exposing the nerve, taking care to break down the frail edges of enamel, that the softened dentine may be removed beneath the cusps. The cavity being wiped out with creosote, dried and varnished with Fletcher's copal ether varnish, is filled for about three parts its depth with fossiline to which is added one fourth its bulk of iodoform, and to the liquid of which a drop of creosote has been added,—Jacob's gutta-percha is packed on the top to complete the filling.

Capped nerves do not answer well during pregnancy; therefore rather than run the risk of exposure, it is better to leave some decayed (disinfected) dentine behind.

Dead teeth are prone at this period to give trouble, becoming loose and tender or abscessed. If the roots have been filled, the gum above should then be well painted with aconite and iodine, or a capsicum-plaster applied at the root. Complete rest should be obtained by removing pressure from the antagonising tooth.

In teeth where the pulp is but recently dead or giving trouble, the nerve should be removed and the canals cleansed with permanganate of potash, or peroxide of hydrogen, a rhizodontrophy hole drilled, and a filling placed in temporarily, till the patient is in a better state of health to permit more permanent treatment. Should this fail to give relief, and extraction be undesirable, the tooth should be cut down level with the gum and the canals, where accessible, enlarged to give free vent. When extraction is thought necessary, the operator should be alive to the risk and responsibility of producing a miscarriage, and the operation when convenient should be performed at the patient's own house, in the presence of the family doctor, the patient assuming a recumbent position during or immediately after the extraction. Less danger is said to exist when anæsthetics are employed.

Patients are sometimes met with who suffer at the neuralgic foci without sufficient evidence being found in their teeth to account for it, and these we may safely hand over to their medical attendant.

In conclusion, I believe that the rapid decay affecting the teeth during pregnancy, is largely, if not wholly, dependent on the acid condition of the oral secretions; (the teeth, as it were, being constantly subjected to the action of an acid bath of 98°,) and still greater is the effect produced during the hours of sleep, when less saliva is secreted and fermentation becomes more active.

The teeth being unable to withstand an acid solution beyond a certain strength, break down at their most vulnerable points, and the mischief must depend on the resisting power of the tooth structure, and the strength of the acid secretions to which they are subjected.

I can hardly imagine the lime salts being removed through the medium of the pulp and dental tubuli, and more so, as on the authority of Professor Wedl, the pulp becomes subject to fatty degeneration during pregnancy.

THE best place to illustrate the use of the two golds in combination is in compound fillings between molars and bicuspids. The old way was to make permanent separations; now we cut through the grinding surface, extending the cavity back into a fissure sufficiently far to obtain secure anchorage; then beginning at the cervical wall, fill solidly with non-cohesive gold from one to two-thirds of the cavity, finishing off with cohesive gold and leaving the tooth as nearly as is in our power in the same shape as when intrusted to the patient's care by nature.

Dr. W K. Slater.

British Journal of Dental Science.

LONDON, SEPTEMBER 1st, 1893.

THE OTHER SIDE.

A few months ago we published a report of that part of the proceedings of the GENERAL MEDICAL COUNCIL which dealt with the suspension of the recognition, for registration, of dental diplomas from Harvard and Michigan. This enabled our readers to form an opinion as to the validity of the remarks which we made on the subject in the same number of the JOURNAL. If there was one reflection more than another forced upon the reader of the COUNCIL'S proceedings, we believe it might be represented by the head-line, " A Dental Dilemma." This last word was, indeed, quoted from the speech made by one of the members of the Council. Application was made for the recognition of diplomas from other Colleges besides Harvard and Michigan, and the Council was apparently in difficulty as to where to draw the line. The way out was to suspend the recognition of all foreign diplomas which were granted on a less curriculum than our own licensing bodies demand.

Those whose business it is, and shall we not say pleasure also, to read the representative American Dental Journals have, of course, been interested in the manner in which the COUNCIL'S proceedings have been met; and we may select the Editorial in *The Dental Cosmos* as being a praiseworthy and successful attempt to review the position with philosophic calm. It is, throughout, written in a spirit of absolute fairness, and, while avoiding anything suggestive of undue resentment, its tone conveys the idea that the writer has a reserve force begotten in the belief of the righteousness of the cause he argues for. From our previous remarks we can scarcely be expected to agree altogether with the statement that the action of the COUNCIL was brought about by a memorial presented by "some seventeen prominent English dentists." A pseudo-inspired writer in *The Dental Review* has also misunderstood the true meaning of the memorial, which, signed almost entirely by hospital surgeons and teachers, may be regarded as a representative opinion of the London Schools. It may have been a factor, but we still think that the predisposing cause was the singling out of the two Universities for recognition, and that the subsequent importunity of others to be treated in the same manner, proved the exciting cause for the Council's action. But we can agree with the *Cosmos* that the right to legislate protectively is nowhere better exemplified than in "the oft-times conflicting legislation affecting dental education and practice in the several States of our Union," and that the justice of the exclusion is apparent in so far as it places all American colleges on the same basis with respect to recognition of diplomas. "It is a question of the relative merits of the respective dental educational systems of the two countries," but whilst admitting the benefit of a preliminary education, the *Cosmos* would join issue as to the form this should take. It thinks that an examination modelled upon the final examination of the American highest grade manual training schools, is the best test of the fitness of candidates for dental work. We are not aware that such a test is demanded from dental students throughout the United States, nor do we know the strength of the examination. We gather, from the article before us, that it includes history, languages, mathematics, English; a good working knowledge of the physical sciences and drawing; a practical demonstration of the manual dexterity of the student, which tests his knowledge of tools, their manufacture and uses; coupled with a full degree of familiarity with the physical properties of the materials upon which the tools are used, and a practical knowledge of the constructive uses to which these same materials are put All this sounds excellent, and affords good matter for the text that "the function of a preliminary examination is to determine the fitness of a candidate to pursue the curriculum that leads up to a specified calling."

On another point, which was before the COUNCIL, we do not find much comfort. No serious attempt is made to meet the criticism as to the want of thorough anatomical and surgical training. Whilst admitting that there is much in medicine that is essential to dentistry, we are told that "so long as dental educators are content with pursuing educational methods which are a servile imitation of those pursued in general medicine, so long will the training of their students be imperfect." No one, so far as we know, suggests that a medical training alone will make a successful dentist; but the three years' mechanical pupilage coupled with the dissections and hospital practice required by our curriculum, should render it likely that, if the supply of men of the necessary calibre continues, we may hope that the public will still be provided with some good dentists of home manufacture.

We regret that the Dublin College still merely recommends, and does not insist upon, the mechanical training. This is the one weak spot which our Transatlantic brethren may probe, if they feel so inclined.

TOOTH CULTURE ON THE CONGO.—Under this heading the *Journal für Zahnheilkunde* quotes some information from "Congo Illustrated." In Ebanza it is considered a shame for women to have white teeth; that condition is good enough for white people and for dogs, but a black woman must have dark teeth. The negresses universally colour their teeth red or blue, and some women punch the teeth in order to let in a coloured gem. Amongst the Bangolas all the women have their teeth filed, until they become [illegible]
and each tooth is at least four millimeters from

This is not the practice amongst the Bangola men; they are notorious cannibals, and their canines are said to resemble to some extent those of carnivorous animals. Among the Bakongo only those men who have both the lower central incisors removed are considered as distinguished. The Mabala has all the four upper incisors extracted, and the lip perforated in order to allow a glass crystal with a long point, or a fish-bone to pass through.

THE PATHOLOGY OF HEADACHE.—Dr. Haig has contributed a very interesting paper to *Brain* upon "The Physics of the Cranial Circulation." His previous investigations and writings have gone to show that certain forms of headache, epilepsy, and mental depression bear an important relation in time to the excretion of urates by the kidney. This seemed to indicate that there was an excess of urates in the blood which affected the intra-cranial circulation, and so altered the functions of the brain. Dr. Haig now quotes some interesting researches of Professor Grashey, and applies them in such a manner as to extend his argument and point out the way in which urates disturb the intracranial circulation, namely, by producing high arterial tension. We have often wondered whether the position assumed by the dental practitioner at the chair side, by interfering with the circulation, might not explain the origin of the headaches too many dentists suffer from.

DENTISTS AND ANÆSTHETICS.—A correspondent writes to the *British Medical Journal* to know if a registered dental surgeon, "a L.D.S. by law," is allowed to give laughing gas, and to charge a fee for its administration, without the presence of a medical man. The answer is that there is no law upon this subject, and then, although excellent in substance, the reply goes off the track and the practice of administering anæsthetics alone with the patient, is rightly condemned. The correspondent, however, gets no information as to a dentist getting a fee, without the presence of a medical man. We venture to think that many such are earned and received. We quite agree with the following :

"It is the duty of medical practitioners in the country thoroughly to understand the administration of nitrous oxide gas, so that dental surgeons may with confidence rely upon them. This, we regret to say, is not the case ; the dentist often can administer the anæsthetic better than the doctor, because during the dentist's hospital career he has seen the laughing gas administered frequently, perhaps twelve to twenty times daily."

We would only add that the dentist, when at his special hospital, has probably been trained to administer, personally, nitrous oxide gas, taking care that for anæsthetic purposes it shall not become " laughing gas" by mixture with air.

DENTISTS AND DOCTORS.—The following is, we think, a very good reply to a " Junior Member," who wrote to the *British Medical Journal* for information as to what charges are usually made for reciprocal work by dentists and doctors :—

" We understand that it is not customary for medical men to charge dentists for any visits or prescriptions, but any out-of-pocket expenses ought to be refunded. For instance, to pay a visit and write a prescription occupies time but might be gratuitous, but drugs, surgical instruments, etc., should be paid for if supplied by the medical man. Similar rules apply to dentists. Any operation such as scaling or extraction should not be paid for, but the dentist should be remunerated for any material he may use in filling, or for the material, etc., used in manufacturing a denture. Sometimes a mutual arrangement is made by which half the usual fee is paid by each, and this is a very satisfactory arrangement; such arrangement should only include the wife and sons and daughters, and ought not to cover all the relatives."

THE INTERNATIONAL MEDICAL CONGRESS.—After several more or less vague reports, it is officially announced that the meeting of the Congress which was to have commenced this month at Rome, has been definitely postponed until next April. It seems that the advisability of such a change was brought before the executive committee four months ago. At that time, however, cases of cholera were limited to a few places in France and the Austrian frontier, and the Italian and foreign committees having been consulted upon the postponement question decided against it. The executive committee were of opinion that a departure from the original fixture would be justifiable only if the public health of Europe was compromised to such an extent as to oblige the medical men of affected countries to remain at their posts. Since then, the spread of cholera led the majority of European countries to issue orders detaining their public health officers at their respective posts. An emergency meeting of the executive committee met on July 30th, and after communicating by telegraph with the Presidents of the organising committees of the nineteen sections, finally made public the postponement of the Congress.

THE USE OF THE "KEY."—*The Lancet* in reviewing a book upon Tooth Extraction, which we also recently noticed, alludes to the employment of this " barbarous instrument," as recommended by the author. Our contemporary is under the impression that it is only to be found in the museums of dental hospitals amongst the antiquities. And yet, not long ago, being curious to see what provision was made in the dental armament of naval surgeons, we closely inspected the instrument case displayed at the Naval Exhibition, and had no difficulty in recognising our old friend reposing in its own separate compartment. There was no indication that it was to be regarded in the light of a curiosity, and we came to the conclusion that the exigencies of red tape still demanded a supply of instruments fashioned upon the same pattern adopted many years back.

A Pharmaceutical Prosecution. —Some time ago we published an account, reported in the *British Medical Journal*, of a case of mercurial poisoning where several teeth were lost. The patient was very ill, and narrowly escaped necrosis of the jaw. The cause, in the opinion of the medical attendant, was traced to the use of a cosmetic lotion, recommended and supplied by an American. The same person has now been prosecuted by the Pharmaceutical Society of Ireland for selling a poison without being duly qualified under the Pharmacy Act. An inspector purchased a bottle of "Rupert's Skin Tonic," and a book he received said the preparation was harmless. Professor Tichborne found eight grains of corrosive sublimate, and said the ingredients in the bottle were worth about a half-penny. It was stated the price to the public was half-a-guinea. The magistrate imposed a fine of £5 and costs.

Sturdy Bacteria.—There remains, no doubt, a good deal to be learnt about microbes, and an interesting point has recently been published. It is, of course, usual to sterilize the gelatine employed as the nutrient medium in which bacteria are grown for observation. But it seems there are certain spores to be found in gelatine which are exceedingly difficult to destroy under the ordinary methods. Heim sterilised some broth into which some of the suspected material had been previously placed. After steaming for one hour, which destroys ordinary germs, the broth was kept in the incubator, and on the following day showed definite growth. The experiment was repeated several times, always with the same result. It was found that six hours free steam, or fifteen minutes with compressed steam, was necessary to destroy the spores of these highly resistive germs.

Deaths During Tooth Extraction.—An inquest has been held at West Bromwich concerning the death of a domestic servant named Handley, who had died while under the influence of chloroform. The girl requested that chloroform should be administered while she had twenty teeth extracted, she suddenly ceased breathing when twelve had been removed. The jury returned a verdict of "Death while under chloroform," and expressed the opinion that the anæsthetic was properly administered.

In a second case the patient was also a girl, whose age was 17. Mr. C. E. Bashall, house-surgeon to the South Devon and East Cornwall Hospital, Plymouth, informs the *British Medical Journal*, that she attended at the out-patient department for the extraction of some teeth on August 9th. It was found necessary to extract nine teeth altogether, and she was advised to have an anæsthetic. Chloroform was administered by Mr. Bashall on a Skinner's inhaler, and the patient took the anæsthetic well, and was well under the influence of it in about five minutes. During the extraction of the eighth tooth she showed signs of recovery, so a few drops more were administered. During the application of the forceps to the ninth tooth the patient was noticed to be looking cyanosed. The operation was immediately stopped, the tongue pulled forward, and artificial respiration began. At the same time she was found to be pulseless. After artificial respiration had been continued for a few minutes, and a subcutaneous injection of ether given, she gave a few gasps. Artificial respiration was then continued for forty-five minutes, together with the application of the battery and injections of ether; but the patient never rallied. The only pathological condition found *post mortem* was fatty infiltration of the muscular tissues of the heart and body; the heart was very pale and flabby.

Abstracts of British & Foreign Journals.

THE TREATMENT OF NECROTIC CONDITIONS IN THE ORAL CAVITY.

By RODRIGUES OTTOLENGUI, M. D. S.

Dr. Ottolengui addressed a letter to ten eminent dentists, and to an equal number of prominent oral surgeons, with which he enclosed the following communication:

A suit for damages was recently brought in a Brooklyn court against a New York dentist, in which the claim was that a root had been improperly crowned, so that when finally lost, necrosis had occasioned the loss of a part of the jaw and an adjacent tooth. An affidavit from the attending physician stated in substance, that when called the patient was in bed with high fever, and great inflammation about the teeth. He treated the patient for several days, reducing the fever and enabling her to get out of the house when he took her to a dentist and had the tooth extracted. The defence claimed that the loss of bone was the result of delay on the part of the physician, who should have called in a dentist and had the teeth extracted at his first visit. On this point three dentists testified for the defendant that the physician had erred; that the teeth should have been removed, despite the inflammatory symptoms, and regardless of the presence of necrosis. They argued that the teeth were the source and cause of all the irritation, and should have been removed promptly. The expert for the plaintiff, also a dentist, recalled in rebuttal, testified that the physician's course had been a wise one. That if necrosis were present, or if caries were present, with a possibility of necrosis ensuing, it would have been hazardous to remove the teeth during the continuance of the fever, and in the presence of great inflammation. He claimed that the teeth were no longer involved; that though the primary cause of the disturbance, the disease had now left the roots, and was seated in the bone itself. He predicted that had the teeth been removed, the necrosis would have spread to other teeth. In explanation, he claimed that the wound left after the removal of teeth from a necrotic jaw is continuously open until the necrosis is eradicated: that these gaping wounds offer free access to further infection, and that therefore the retention of the teeth is often advisable, the operation being rather upon the necrotic sequestrum and carious bone, the teeth being removed, if at all, after fever inflammation and necrosis have been controlled. He even claimed that premature extraction might endanger life.

Subsequently to this trial, a prominent gentleman of Philadelphia read a paper, in which he advocated the extraction of diseased teeth to prevent spread of disease. He is reported in the *Cosmos* for April, and the following paragraph appears on pages 278-9:

"There was recently brought to my office, by his family and consulting physicians, a young man suffering with severe alveolar abscess upon the right lower first molar. The second molar, they said, had been extracted about ten days before, with no relief resulting therefrom. The inflammation by this time had extended from the wisdom tooth anteriorly to the cuspid, with evidence of necrosis about the first bicuspid I recommended the removal of the first molar and both bicuspids, hoping it would arrest the progress of the disease, though personally I was in doubt about saving the cuspid. I have found in cases of progressive necrosis, that it is necessary to remove at least one tooth beyond the line limitating the inflammation, but in this case we all desired, if possible, to save the cuspid. Upon operating, I found the root of the second molar had not been extracted, and was the origin of the whole trouble. This, together with the teeth above mentioned, was removed, and the bone found perfectly necrosed from the wisdom tooth to the septum between the bicuspids. Hope was entertained that the disease would go no farther, but in a week the physicians brought him back with the characteristic blueness and spongy condition of the gums extending to the right central incisor, which necessitated the removal of the cuspid, lateral and central, and the cutting away of the process. The parts were healing nicely where the former operation had taken place. Within a week a third visit was made, with the disease extending to the left cuspid. The patient by this time was very much run down, and fears were entertained for his recovery. I urged that the operation should include both left bicuspids, though they did not show any evidence of disease. With this we succeeded in checking its progress. The poor fellow had lost twelve teeth, and the whole alveolar process about them, as a result of allowing the root of one abscessed tooth to remain."

This history is given as a warning against the non-extraction of teeth, but this question arises : Is the last statement of the essayist a true conclusion? That is, did the extensive necrosis and loss of twelve teeth result from the non-extraction of the abscessed root; or on the other hand, was it the result of his wholesale extraction of neighbouring teeth, instead of the removal of the second molar root only, and proper operation upon the necrosis?

This case, cited in an argument to prove that diseased teeth should be promptly extracted, reports exactly the result prophesied by the expert in the lawsuit, in that the necrosis spread, and life was endangered.

The final determination of this serious question is one of the utmost importance to our profession, not only in our actual labours, but in a decision of what shall and what shall not constitute mal-practice in such a case.

Will you therefore express your opinion for the benefit of the New York Dental Society, upon the following points:

(*a*) Where necrosis is present, or suspected, with high temperature, and extended inflammation, would you extract the teeth promptly, or would you reduce the temperature and inflammation first.

(*b*) There being no high temperature, but inflammation and necrosis, would you remove the tooth and adjacent teeth, or would you retain them, operating upon the necrotic tissues only?

In reply to the above, Dr. R. R. Andrews first wrote a brief note, saying that he thought his opinion hardly worth quoting, but added: "My judgment would be at once to remove the cause, afterwards reducing the temperature and treating the inflammation."

A few days later he kindly wrote again, inclosing a reply to the queries from Prof. E. W. Branigan, who is in charge of the Infirmary of the Boston Dental College. Dr. Andrews says of him: "He is as much an authority as any one whom I know in the dental profession."

Prof. Branigan writes as follows: "In answer to the questions forwarded, I should say (*a*) extract at once, but take the precautions that a surgeon would take in an operation for necrosis. The use of an efficient antiseptic before, during and after the operation is, I think, omitted by the dentist more often than it should be; (*b*) I should remove all diseased tissues, and try to keep adjacent tissues in a healthy condition."

The following is a reply sent by Prof. William Taft :

"In reply to your first question, I will say that if there were inflammation and high temperature in a patient whose history would indicate a scrofulous diathesis, which to a singular degree favours the determining causes of either syphilitic or tuberculous necrosis, and which would lead me to suspect necrotic sequelæ, I should advise extraction as an abortive measure, and would lose no time in endeavours to reduce the temperature or inflammation. If the irritant is removed, these will subside of themselves. If the necrosis has already advanced, it is a matter of indifference whether the tooth or teeth are removed or not, as the disease would run to its limit and the teeth would be no factor in the process. But as they become painful and annoying to the patient, and interfere with mastication, it would be proper to extract for his comfort. To your second question, if the tooth were devitalized and acting as an irritant it should be extracted."

Prof. James Truman sends the following opinion :

"My experience and reasoning have convinced me that after the necrotic condition has been established by osteitis, or acute inflammation of the periosteum, the teeth do not affect the disease and are not a factor in the treatment. The question of their retention or extraction is one to be considered carefully, and is largely dependent upon the tooth or teeth, and the extent of the lesion, and whether the necrosis is confined to the alveolar process or has extended to the body of the jaw. There is an important distinction to be made here, for the former appears to be self-limiting and not ordinarily very extensive, while the latter may involve the entire maxilla. Where the alveolar process alone is involved, the teeth may be retained until removal of the dead bone and reformation of tissue. My experience has not been been very favourable in this, for the teeth having lost their attachment have become to that degree a source of offence. The difficulty is to determine the presence or possibility of necrosis. The diagnosis and prognosis have each an element of doubt until well known symptoms are established. I have tried extraction of the teeth, as well as their retention, without any positive result in either case. If a tooth must be removed, it is immaterial whether it be extracted during high temperature or at a later period. The origin of necrosis is not as yet clear to my mind. The explanation ordinarily given that necrosis occurs as the consequence of any cause which sufficiently impedes the circulation in the neighbourhood is doubtless true, but it is very frequently difficult to assign any explanation leading to the inference that it had arisen idiopathically. Such an idea, however, cannot be entertained. Inflammation does not always produce it, or else there would be no escape for patients in alveolar abscess. Constitutional conditions favour it, and again it will start unquestionably from infection, though even that is difficult to prove, as a recent severe case demonstrated. There is no question but that necrosis once established in any bone, it will progress independently of all treatment or surgical interference. It eventually is checked by natural processes but the cause of this is by no means satisfactorily explained. The following, from Holmes's Surgery, gives that generally accepted: 'The periosteum, or medullary membrane. as the case may be, separates from the dead bone and becomes inflamed, a quantity of ossific deposit (more or less, according to various circumstances) is poured out between it and the dead bone, and this deposit soon becomes converted into new bone, forming a sheath over the dead portion, by which the latter is enclosed or invaginated.' My own view is, that eventually it will be found that pathogenic germs are the cause of its origin. Its progress then can be understood, and the reason why it is 'impossible to lay down any rule as to the time at which a sequestrum may be expected to be found separated from the rest of the bone.' In a severe case coming under the writer's care, the disease began in the process of the right superior wisdom tooth. This tooth had been extracted by another dentist. The history of the patient was clearly syphilitic. The progress was continuous but slow, finally involving half of the superior maxilla. It stopped anteriorly at the lateral incisor. Why a line of demarcation should be thrown up at that central incisor will remain, it is presumed, without explanation, unless the germ theory be accepted. In a recent case, with no special history, necrosis began in the right cuspid. An attempt had been made by a village practitioner to remove a bicuspid root. The presumption is that the periosteum became infected. The disease rapidly progressed until, when last seen, it involved the left side as far as the canine. Everything was tried to stay its progress, such as extracting in advance, and careful antiseptic treatment, without avail. My experience in surgical interference has always been, if not bad, at least of no benefit. Even where portions of the jaw bone have been removed in advance of the progress of the disease, the results have been of no value. Hence the extraction of a tooth, as in the case mentioned, must have been merely a coincidence, as I cannot regard it as having any effect upon the final result, My treatment has been of a waiting, antiseptic character, preferably using hydrogen-peroxide and a continuous wash of phenol-sodique. By this means I have kept patients very comfortable for months, or until such time as the sequestrum became loosened or ready for removal. To sum up the answers to the queries propounded, I would say (*a*) I would extract teeth promptly, with high temperature, but without any expectation of the result being affected one way or the other; (*b*) I would remove the teeth, there being no high temperature, as my judgment dictated at the time."

Prof. W. C. Barrett writes :

"(*a*) Extract the teeth promptly, as the source of the diseased condition, and as the continuously irritating cause.

(*b*) I cannot conceive of much inflammation without more or less inflammatory fever, but as nearly as I can comprehend the case, I should remove the necrosed bone and tissues, and with that might come the teeth which were involved. I am not ready to say that I would remove either immediately, as the symptoms might point to the formation of sequestrum and slough, and in that case I should simply assist that solution of the difficulty. If I found it necessary to operate, I should endeavour to go back far enough to reach the limit of the extreme osteitis which would be present. Of course the constant use of antiseptic washes and dressings would be indicated, with such constitutional treatment as the case demanded, whether the predisposing cause was in a distinct diathesis, or a condition of atony. It is impossible to make a clear diagnosis of any case, to give an intelligent idea concerning the prognosis, or to indicate any positive course of treatment, without seeing and watching it from day to day, and taking note of the many and constantly varying conditions which govern the course to be pursued."

The Dental Practitioner.

(*To be concluded.*)

CROWNS.

By E. A. Royce, D.D.S., Chicago.

First to be considered is when shall a tooth be crowned. As a rule no tooth should be crowned or capped that can be filled with a fair prospect of preservation.

At the present time many are inclined to shirk the labour and nervous exhaustion of long gold operations, saying, that "if there is a good sized cavity in the tooth they can excise the crown and replace, in the time it would take to fill the cavity, with less arduous labour and get a larger fee for the operation."

Admitted—but if you can save the natural crown for three, five, or ten years, the liability to peridental trouble will be enough less to pay for the labour of filling. But suppose we decide to crown, what shall determine the kind we use? The first porcelain crowns were used without a band and were held in place by a dowel of wood, and some of these not only did good service but presented an exceedingly natural appearance. The Bonwell and Logan crowns so far as appearance go, rank first for all anterior teeth. It is very difficult to select a tooth which when backed and soldered will shade to be a perfect match to the adjoining teeth. This can in some degree be overcome by backing and soldering several teeth and then selecting the best shade, but the shape and colour of a Logan crown is so much better than the band crowns that it is to be preferred.

The objection of no band to protect the root has not quite the weight that it had some time ago, for Bonwill crowns without bands, mounted ten or twelve years ago upon fairly good roots are as good to-day as ever. Of course the condition and structure of the root must be considered, and a frail root, or one of poor structure, should be banded. This is sometimes done very satisfactorily by using a Logan crown and fitting a band to cover the joint, or the more common band crowns may be used.

The foundation of the crown is the root. Upon its health, vitality and endurance, the life service of the crown depends. Most of the various methods of treating and filling canals seem to be successful in the hands of their exponents.

It has been advocated that all pulps should be killed if shells were to be adjusted. The reason given for this wholesale destruction of pulps is, that grinding the enamel irritates the pulp so it will be stimulated to calcify and eventually die under the crown, causing no end of trouble.

One of the most important things is to obtain a band that fits the root; shaping the root may be done by means thought best, but it should be so shaped that when the crown is in place the band will not not stand away from the root above the gingival margin, but will fit closely, so that if the edge is is properly bevelled there will be a smooth joint approximating as nearly as may be the natural condition existing when the enamel was in place.

This has been urged many times, but observation and experience show that this is a point where we are likely to say let it go—it will do. But it will not do, for if we have irritation at this point we have irritation of the soft tissues surrounding the tooth, and this irritation will tend to recession of the gum and loosening of the teeth. The other extreme of driving a band clear up to the process seems worse even than leaving it short, as we all know an impingement of the gold upon the process would cause its breaking down either by absorption or necrosis. The gold should be fitted nicely under the gum, shaped to agree with the gum margin and fitted to the root and bevelled.

The contour of the crown should be similar to the tooth crown that it replaces. All that could be said in favour of contouring fillings can with equal force be urged in the contouring of crowns. Preservation of the interproximate spaces is urged strongly. Not only should the spaces, but also the arched form of the gum in this space be preserved to direct the food to one side when it is crowded between the teeth down to the gum. The preservation of contact is not difficult, but preservation of the gum tissue in the space is not so easy. The tooth to be crowned is usually broken down for some time and the teeth on either side tip toward each other, annihilating the space between the necks of the teeth. If we trim the root in this case and put on a crown to fill the space as we find it, the articulation will be to a greater or less extent destroyed by the malposition of the adjacent teeth, the sides of the crown will follow the proximal surfaces of the teeth, increasing materially the surface of contact, thereby increasing the chance for food retention and at the neck of the tooth the gold will be in contact with the adjacent tooth, leaving no space for gum tissue. In many cases it is well to force the teeth back to their places so that they will be in contact with the teeth beyond them, and then place a crown contoured so as to hold them in their normal position. One of the urgent reasons for good points of contact is the support offered to a tooth by its fellows on either side. Each tooth has a limited movement in the socket, the root is swung so to speak in the socket by the fibres of the peridental membrane. In the perfect arch this movement is limited. The front teeth move forward easily but press laterally or backward, and the resistance is very great, remove the points of contact and the tooth will move with equal facility in any direction.

A tooth that is filled or crowned and left without the support of its neighbours by the proper contact will loosen. Of course this is not done in a day or a week, but each of us can find many cases where it has occurred.

The articulation of crowns and teeth as well, does not receive the attention that it demands. The labour performed by each tooth should be its share of the whole work, unless there is reason for a variation—as one tooth stronger or weaker than its fellow, in which case the burden should be varied to meet the demand.

The crown should be left a little short, for if it quite hits its antagonist at first it will soon be found doing more than belongs to it. Constant abnormal pressure upon any tooth will soon change a physiological to a pathological condition even under the most favourable circumstances, and how much more should we expect pathological conditions in this case, for we usually have a pulpless tooth and the gum has been freely cut and gouged in fitting a band around the root, and the band still remaining there as an irritant to the gum tissue, and either directly or indirectly through mucous membrane and periosteum the peridental membrane is irritated. Add to this the constant blow or a sliding blow at each closing of the jaw and pericementitis is almost sure to follow. The least inflammation of the peridental membrane of course projects the tooth from its socket by the thickening of the tissue. This increases the blow so that finally we have the tooth projecting from the socket far beyond its normal distance.

In constructing dental bridges how many of us pay attention to the abutments and piers. A piece of work is to be placed in the mouth that is to cost the patient time, trouble and money, and if properly inserted it should be durable and comfortable. But how many are thus? And if they are not —why not? You all find the cases that Doctor Somebody-else put in that "cost 400 dols., and lasted four months," or "the piece was so uncomfortable that I could not endure it." Was the peridental membrane healthy? If not what was the cause and can it be removed? Can a crown be fitted perfectly? Is the pulp alive? If so, should it be devitalized (even if healthy) before the shell is put on? Can you get the articulation so that each root supporting the piece will have its relative share of the work to do, and that share not more than it is capable of enduring? Have enough abutments and piers so that the bridge will not act as a lever, and by constant side pressure or pull loosen the roots.

The Dental Review.

THE CONSERVATIVE TREATMENT OF TEETH BY GOLD.

By Francis Peabody.

The writer disclaims any intention or desire to inveigh against the use of cohesive foil. Its value is recognized; it has its place, and in some instances can accomplish that which cannot be done with foil in any other form; but the statement is ventured that it is less kindly received by the enamel and dentine, that it is less in harmony with the tooth structure, that in its use enamel margins are more liable to be broken down, and that it cannot be brought into as close contact with the walls of a cavity as foil that depends on other principles than cohesion for its retention. The use of non-cohesive foil does not depend on one method only. It may be used on the wedge principle, one part supporting another, each piece acting as the keystone of an arch. It may be packed on the principle of incorporation, one portion being locked, dovetailed, or incorporated into another mechanically, or it may be made to cohere by rotation of the instrument, for while unlike so-called cohesive gold, non-cohesive gold is cohesive on the same principle that all pure metals are, by molecular cohesion, or attraction of their molecules. Foil that depends on the wedging, or other principles, aside from cohesion from heat, can be forced to the point desired, and pressure on its surface, whether from hand or mallet, is felt through its whole substance, and all additional pressure, or blows, serves to drive it more closely to its place. It spreads under the burnisher readily, and can be made sufficiently hard for all practical purposes, either in approximal or coronal surfaces—not as hard as cohesive foil, and it is just this hardness at the cervical walls that we wish to avoid, for undue density does not tend to conservatism. Cohesive foil is less tractable; it may be placed just where it is wanted, for it cannot be driven there. Pressure, instead of being felt through its substance, only serves to harden its surface and all the blows that can be rained on the surface of a filling that is not in absolute contact with the walls of a cavity will not make it hug them more closely. In short, soft foil can be made to fit the cavity more thoroughly, to keep out the moisture and microbes, and to prevent the recurrence of decay at the margins of the fillings, in the same way that a velvet cork would fit more closely, more securely, in the mouth of a bottle, than of a less yielding substance.

At the cervix of a cavity, and at all its margins, soft foil is preforable to cohesive, and in the approximal surface of the posterior teeth, tin or alloy is probably better than gold at the gingival margin where it can be used, (and it is seldom that it cannot). No pits or retaining points are necessary to start the filling, and these are always better dispensed with. In examining a mouth some time since, that had in it quite a number of large approximal fillings of cohesive foil, made by an expert operator, some ten or twelve years prior to the time it was seen, every one of the fillings were found defective at the cervical wall, secondary decay having occurred, excepting in one, the gingival margin having been filled with tin, on to which gold had been built. The marginal walls of this were perfect.

Is it easy to use non-cohesive foil skilfully? No! It is no lazy man's work. It requires strong muscular exertion. A filling (?) can be made of cohesive foil by the average operator that will remain in the cavity with more certainty than if made of soft foil, but the latter will be more conservative, and can be introduced in less than half the time, saving our own backs, and the neck of the patient from prolonged fatigue. Will cohesive foil save teeth? Undoubtedly; but it requires a greater degree of patience, a larger expenditure of time, and more prolonged physical exhaustion than is required by the use of soft foil to produce equally good results.

Before the introduction of cohesive foil teeth were filled with gold that was non-cohesive, with soft gold, the softer the better, and these fillings, put in forty or more years ago, in many cases, are still standing, preserving the teeth, monuments of the skill of the workers of the material then almost exclusively used. Have we deteriorated? Have we lost the skill, or rather failed to attain that of the old masters of fifty years ago, as the painter has failed to recover that of the old masters of his art of hundreds of years ago? Why do fillings of gold fail? Sometimes from lack of judgment as to where it should be used, (for there are certain kinds of chalky teeth that gold will not save no matter how used or by whom,) and frequently from a lack of skill and how to use it.

There are certain fundamental rules that must not be neglected, that must ever be our guide when a tooth is filled with gold, if we wish success to attend our operations. One of these is to so manipulate the material that it will never, under pressure, draw away from the margins of the cavity. This can be accomplished by always having the filling higher in the centre than at the edges during the process of construction. If this is not done, a microscopic separation of gold from tooth is liable to follow, allowing fluids to enter, thus establishing secondary decay. This refers more particularly to approximal cavities in the posterior teeth, though it is a good rule to follow in every instance. In the anterior teeth, in approximal surfaces, where the cavities are not slotted, the inner portion of the filling should always be in advance of the external, that there may not be left a pit at the cutting edge which is almost impossible to fill. That the cavity should be thoroughly dry is hardly necessary to mention, though, before the days of rubber dam, teeth have been successfully filled under water; but this was with non-cohesive foil in the form of cylinders. Many operators anneal their gold by passing it through the flame of a lamp. This is better avoided, as an excess of heat tends to make it harsh and less yielding under the instrument. Many other rules which should govern the operator in his manipulation of gold can only be learned by experience. Each one knows something of value which has escaped the observation of others, and a free ventilation of this subject will put all in possession of valuable information.

Southern Dental Journal.

LITTLE THINGS.

By Dr. W. H. Wright.

It is human to shrink from pain and there is no one who will not submit more readily to treatment by one who is careful in this matter. Ability to do this argues a nice attention to little details, a skilled hand as well as a kind heart, which will amply reward one who cultivates the habit of considering nothing little which adds to the comfort of his patient. The best illustration of the subject will be found on the beaten path of daily practice rather than in those exceptional cases which by their very rarity put the practitioner on his metal and induce the greatest care.

It is a small thing after the patient is seated in the operating chair, in a highly excited and nervous state, to have an impression taken for an upper plate, that the operator saturates a piece of cotton with cocaine and directs him to place it on the tongue and move it over the roof of the mouth. This will enable him when the impression cup is introduced to bear it without discomfort, so that the cup shall remain in place until the plaster hardens, and will prevent the retching and possible vomiting which sometimes, in patients of sensitive stomachs, render the operation both painful and liable to complete failure. Attention to these minor points often aids the operator as much as it relieves the patient. Again in opening the vulcanizer if we have used a "Whitney," needless effort may be avoided by a little forethought. and our patience and our temper be improved. If instead of the old methods in which perhaps we have jammed our hands and have felt like breaking a commandment, we have a long-handled, malleable iron wrench, which a village blacksmith can make, for the top of the boiler, and place this in position and lay the vulcanizer on its side on the bench and hit the long handle of the wrench a smart blow or two with the hammer the work is done without friction to hands or feeling.

It will make much difference with our patients, especially the little ones, if we have so kindly a remedy, so wide in the range of its usefulnes as phenacetin. This is especially valuable with children in cases of mild febrile reaction of childhood which arises seemingly from slight intestinal irritation, and which is so common during the eruption of the teeth in infancy. It will be found to be most soothing in its influence when administered in doses of from two to four grains according to age, once in three hours. Generally it induces grateful and refreshing sleep and that moist condition so much to be desired. Slight irritation may thus be subdued, which unrelieved may prove to be quite serious. We should not lose sight of the value of lancing the gums over the approaching tooth to relieve the pressure on the sensitive nerves and thus kindly aid nature in its task of bringing a new tooth into the world of dental usefulness.

It is extremely useful in adult cases where the patient was suffering from acute alveolar abscesses with all the accompanying febrile and distressing symptoms, loss of sleep and general nervous irritability. Doses of from five to seven grains repeated once in three to four hours, induce sleep and reduce temperature. Phenacetin is certainly one of the most valuable and one of the safest of the products of the coal tar series which are in use to produce hypnotic effects. It is much to have in our hands so good a substitute for quieting pain instead of resorting to the hypodermic injection of morphia, inducing in many cases a habit which eventually wrecks the poor victim.

The Dental Register.

THE INSPECTION OF TEETH IN SWISS SCHOOLS

"A tooth is worth more than a diamond," said Don Quixote on a memorable occasion; but the profound physiological truth of the saying has but small practical force even in the nineteenth century. Switzerland holds a bad pre-eminence in the abuse of this precious auxiliary to digestion; indeed, dentists, British or American, who practice in her chief towns are unanimous in declaring that nowhere is neglect of the teeth, with all its disastrous and (on the side of personal comeliness) hideous consequences, so conspicuous. Not a day too soon the Scoiété Odontologique of Geneva, in concert with with the Minister of Public Instruction, has made a series of visits to the primary schools with the view of examining the teeth of the pupils. Their report, just issued, is fraught with striking revelations, not without relevance, we are afraid, to the same class of schools in other countries. Teeth all the world over, they assert, are degenerating—a result (amongst other causes) of the perfection of the culinary art and the diminished use of mastication. We can, however, minimise this inevitable process and by timely precautions guard against tooth-enfeeblement and caries. Every six months the mouths of children seven years old should be examined by the dentist for at that age the "eventual points of caries" can be treated in time. Later, at the age of ten or twelve, the mischief is already advanced, but not so far as to be quite beyond professional relief. The Société Odontologique of Geneva philanthropically makes these inspections gratuitously in the case of primary schools containing that portion of the young generation which is less favourably circumstanced for calling in the dentist. The *modus operandi* of the Society is this: On visiting a school its representative addresses his young audience in popular language on the genesis, the growth, the uses and the ailments of the tooth and winds up with a practical demonstration of how much may be done to keep it strong and healthy. The first place in this conservative duty he assigns to "attending to the mouth"—keeping it clean by washing it and washing the teeth after every meal. The widespread neglect in practising this precaution the Société proves by statistics: Out of 413 boys inspected, 370 (that is, 90 per cent.) never brushed their teeth at all; out of 459 girls, 320 (or 70 per cent.) were equally neglected; whilst in nearly all of them caries was already declared or far advanced—more than 75 per cent. of these young persons requiring the urgent interference of the dentist. After his visit the Société's delegate draws up a "schema" or dental plan indicating in each case the state of the child's mouth, the teeth to be specially protected and the general treatment to be adopted. This "schema" is sent to the child's parents, who are thus instructed as to what has to be done. In these instructions the Societe insists on careful brushing of the teeth from the age of seven and upwards as the best means of averting caries, which is so injurious to the health. "Recent observations," adds the Societe's report, "demonstrate in neglected mouths the presence of the majority of the germs or microbes which generate infective maladies. Cleansing the mouth, therefore, is a duty imposed on the community from every point of view." All honour to the Societe for its philanthropic work, which, as already hinted, might with advantage be imitated elsewhere.

The Lancet.

ANNEALING GOLD.

By S. H. Guilford.

The extent to which annealing may be advantageously carried depends on the thickness of the foil and the manner in which it is to be applied. In the heaviest grades of rolled gold intended to be used on or near the surface, or where the entire filling is to be made from it in large and accessible cavities, the gold may be heated to a dull red colour, and the greatest degree of cohesion thus imparted to it without interference with its working properties, for it is intended to be laid layer by layer in a comparatively even and regular manner.

With the lighter grades of foil, prepared in the form of twisted ropes or folded ribbons, for use in less exposed cavities and throughout the filling where the same evenness of surface cannot be maintained, so great a degree of annealing would seriously interfere with the proper working of the foil, without conferring any real advantage. It has, therefore, been found best to give the lighter foil, which is used throughout the body of an ordinary filling, only slight cohesiveness, reserving the greater degree for surface work, where more perfect cohesion is required. The semi-cohesive variety of foil, which does not unite on casual contact, but will allow one surface to glide over another without interference, and which only becomes united under pressure, is the kind best adapted for the main portion of all ordinary or or medium-sized fillings. When nearing the surface, the same gold slightly annealed will give to the filling that uniformity of texture and density so necessary to usefulness.

International.

CAPPING PULPS.

By F. H. Gardiner, M. D., D. D. S., Chicago, Ill.

1. The safest method of destroying the pulp of a temporary tooth is to first cap it with oxychloride of zinc. The necessity for capping the pulp of a temporary tooth exists only when

a portion of the crown has been destroyed prior to the fourth or fifth year; the resorption of the root of a deciduous tooth not usually beginning until a later period.

Before capping is attempted, it is presumed the pulp is in a normal or at least a healthy condition.

2. The pulps of adult teeth should be capped, or efforts to save the pulps should be made in all front teeth no matter at what age they may become exposed. The pulps of teeth that are exposed posterior to the second bicuspids, if any doubt exists as to their being saved by capping, should be destroyed at once. This applies to nearly all ages above the seventeenth or eighteenth year.

3. After application of the rubber dam, perfect dryness of the cavity and surface should be obtained. Over the surface of the pulp a thin film of Canada balsam should be placed, or a film of copal ether varnish. After the evaporation of moisture has taken place, a very thin paste of oxysulphate of zinc should be gently manipulated over and beyond the point or points exposed.

When this is sufficiently hardened, a portion of the surplus may be trimmed away and the whole cavity filled with oxyphosphate of zinc. This must be allowed to harden for a period of not less than thirty minutes. When the patient is ready to leave and before the rubber dam is taken from the tooth, the surface of the filling should be painted with a solution of copal ether varnish. The use of a blast of hot or cold air will cause this to become rapidly dry.

Care must be taken in all such cases to avoid filling the cavity too full, so as to produce no pressure on the pulp in mastication, or when the teeth come together, after wedging, in case it should be a proximal cavity.

The Dental Review.

Reports of Societies.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The last ordinary meeting of this Society was held on Friday July 7th, Mr. W. Rushton, President, in the chair.

The minutes of the previous meeting having been read by the Secretary and confirmed, the President gave the usual welcome to the visitors present.

The following gentlemen were unanimously elected members of the Society :—Messrs. Burroughs, Brett, Jones, Messenger, Ralph, Sugden, Sunderland and Pedler.

CASUAL COMMUNICATIONS.

Mr. NICHOLLS showed a pair of forceps made by Messrs. Ash and Sons to his order. They were particularly designed for the extraction of upper molars where the crown had entirely gone or where there was merely a shell of enamel left. They were constructed on the lines of Coleman's upper stump forceps, but an important difference was the adoption of sub-alveolar beaks, which ensured the blades clearing the crown and not crushing it. These were, moreover, made stronger than in Coleman's forceps so as to extract whole molars. The forceps had been found most satisfactory for the purpose mentioned.

Mr. Nicholls also exhibited a couple of models, illustrating a case of treatment for V-shaped upper jaw and dental irregularity. He regretted that during a recent removal the various grades of this and several other cases had been lost. The patient, a girl 14 years of age, came for treatment of the condition mentioned, suffering also from the presence of a considerable quantity of adenoid tissue which interfered with the breathing, and made articulation quite indistinct. She was advised to have the growth removed first. After this had been done, the 6 year old molars were extracted (two were decayed, one badly), the alveolar arch expanded, the bicuspids drawn backwards, the canines inwards and the centrals and laterals placed so that the anterior teeth stood in their normal curve. The result was most satisfactory, the patient breathing without any difficulty and articulating quite distinctly

Mr. TICE showed a supernumerary tooth which he had removed from behind the upper incisors, and which was of the usual peg shape and had 2 or 3 enamel nodules.

Mr. JENKIN presented an upper model showing 4 molars, the extra one being a supplemental molar, was well formed and placed outside the arch, between the second molar and wisdom tooth. Mr. Jenkin also presented to the Society a 4-rooted lower molar tooth.

Mr. BURROUGHS brought forward a case which had come under his notice, the patient came to the hospital with a red painful swelling at the angle of the jaw, and complained of intense pain on that side of the face, and on examining the teeth a cavity was seen in the second molar, the pulp cavity was found to be empty, the pulp mummified, the anterior root was also in the same condition; the posterior root was found to be partly filled up with secondary dentine. This was removed and the remainder of the pulp was devitalized; this gave great relief, the intense pain being caused by the pressure of the secondary dentine on the remains of the pulp.

The President remarked that he had been suffering from a similar cause, an amalgam filling had been inserted too near the pulp, and had irritated the pulp, and caused secondary dentine to form, this caused him so much pain, that he was obliged to have the filling removed. The crown portion of the pulp was completely calcified. The pulp in the root was then devitalized.

The President then called on Dr. Wm. Hill for his paper on "Deformities of the Jaws and Dental Irregularities," which we publish on page 769.

DISCUSSION.

Mr. **EDGELOW** said he thoroughly enjoyed the lecture and thought that the tongue must exert great influence on the hygiene of the mouth. With regard to anæsthetics, he thought that one should be prepared with several in case one failed, as it is often difficult to anæsthetise patients who have growths about the nose and pharynx.

Mr. **HUMBY** thought that the influence of the absence of a normal condition of the mouth was sufficient to produce caries, and that the fluids of the mouth may be sufficient to produce caries. He said that mouth breathers do not, in his opinion, have caries in the situation defined by Mr. Hill; rather the contrary.

With regard to the influence of the tongue on the formation of the jaw, he thought it was Mr. Tomes who said the jaw was formed by the action of the tongue within, the lips and cheek without, the teeth before and behind and the antagonising teeth. In the face, taken as a whole from tooth to forehead, there is often a shortening in the premaxillary region, with projection of the teeth in that region, and he asked Dr. Hill whether this was due to insufficient development of the alveolus. In cases where the lower jaw is drawn downwards and backwards and the 1st and 2nd molars occupy a high level in both jaws, resulting in occlusion of the back teeth and open bite in front, there is no angle but a short ascending ramus. He asked if these conditions were brought about by infantile mal-development of the ascending ramus. He thought that diet was an important factor in the production of caries, especially the use of jams, sweets, and fruit.

Mr. **Tice** mentioned a case where the upper jaw was very prominent, the bite open and there was nasal obstruction; the 6 year old molars were bad, and the other teeth were all in good condition.

Mr. **Nicholls** mentioned a case he had treated, a large quantity of adenoid tissue was removed, the dental irregularities, consisting of V-shaped maxilla and over-crowded teeth, were corrected and the patient, who used to awaken, in the middle of the night, half choked, was now quite comfortable and could speak distinctly.

Mr. **Rushton** said he thought Dr. Hill was mistaken when he said the tongue has been overlooked in the text-books as a cause of regularity or irregularity, and that his theory of lymph causing early ossification was extremely ingenious, and ought to be followed up by further investigation and statistics. He thought there was a relation between mouth breathing and caries. Caries takes place in the silent watches of the night; during the day the teeth are washed by the saliva and cleaned by mastication. For these reasons he thought it was very necessary that the teeth should be cleaned at night, especially in mouth breathers, as the mucus collects round the teeth and becomes acid. It is also the acid fermentation of food which causes caries, besides the use of acid medicines and fruit. Tonics usually containing acid are often the cause of caries. He thought that doctors ought to instruct their patients to wash out their mouths after each dose with water in which a little carbonate of soda has been dissolved, and said it was our duty as in Mr. Nicholl's case, to advise our patients to have adenoid growths removed.

Dr. **Hill** in answer to the President said that he was not aware that the influence of the tongue on the teeth was mentioned in the text. books, and quite agreed that mouth breathing was only one of the predisposing factors of caries and thumb sucking was a cause of deformities. In answer to Mr. Edgelow he said that he always kept his own anæsthetics and where one does not answer another very often will especially in cases of nasal obstruction. In answer to Mr. Humby he said that he had not given much attention to shortening of the premaxillæ, and said that short ramus was recorded by Dr Paget. some years ago. Dr. Hill said he was very interested in the case brought forward by Mr. Nicholls, and congratulated him on the successful treatment adopted in this typical case, by the removal of the adenoid growths and correction of the V-shaped arch and irregularity of the teeth themselves. In conclusion Dr. Hill said he quite agreed with the President that caries went on more at night time and thought that it was very important that the patient should keep the mouth shut at night and also that voice production should be attended to.

A cordial vote of thanks brought the meeting to a close, and the wish was generally expressed that Dr. Hill would supplement his paper by another on some future occasion.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

Special General Meeting held on June 27th, 1893. The President, Mr. F. W. Minshall, in the chair. The minutes of the preceding meeting were duly read and confirmed.

Mr. J. Stoner was balloted for and unanimously elected a member of the Society.

Casual Communications.

1. Mr. Theakston (on behalf of Mr. Leeming) exhibited a model of a curiously dilacerated lower central.
2. Mr. Lees showed models in the various stages of treatment for irregularities where the 1st bicuspids had been extracted to make room for the canines. In the final model the treatment had reduced the arch into a normal condition. He also exhibited (1) a canine with an excessively long root, the whole tooth measuring 1¼ inches in length and (2) an upper wisdom tooth which in form resembled a bicuspid.

The President then called upon Mr. G. G. Campion for his demonstration on the preparation of sections for the microscope.

Mr. Campion, in his demonstration, described the method of fixing specimens in paraffin preparatory to cutting them into sections. He drew especial attention to the use of a fine form of rocking microtome which he had brought with him.

The various stages of cutting, staining, washing, dehydrating, cleaning and mounting were practically demonstrated and the finished slides were placed under the microscope for the benefit of the students.

The demonstration being concluded the president thanked Mr. Campion on behalf of the Society in giving the demonstration, to which Mr. Campion briefly replied. This terminated the proceedings.

Dental News.

The course of Lectures on Operative Dental Surgery at the National Dental Hospital, which are intended for advanced students and young practitioners, will begin on Monday, October 9th, at 6.30 p.m., by an Introductory Lecture on "Operative Dentistry at the Chicago Dental Congress." The special subjects to be discussed by Mr. George Cunningham in this year's course of Lectures will include:—(1) The Morphology of the Dental Arches as affecting Methods of Treatment. (2) The Practical Application of Bacteriological Research in the treatment of the Mouth and Teeth, (3) Immediate Root filling, (4) Restoration of extremely decayed teeth with Amalgam in conjunction with a Matrix, (5) Crown, Bar, and Bridge work, with illustrative cases. Each lecture occupies about an hour and a half every Monday till Christmas. The fee for the course is £2 12 6.

APPOINTMENT.

Edgar Boverley, L.D.S. Eng., appointed Assistant Dental Surgeon at the National Dental Hospital.

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DISCUSSION OF PAPERS.*

By F. W. Fisher, D.D.S.

Discussion is defined as the act of interchanging reasons, so it would appear that the primary idea of a discussion is to present the various reasons for thinking thus and so, and to judge from such presentation what the true state of affairs may be. Taking this as a basis then, the true discussion of a paper would be not only the advancing of various views of the matter in hand but would call for the reasons for believing these assertions to be facts.

It is of course equally necessary that the essayist shall advance his reasons for such statements as may be open to question, thus avoiding any misunderstanding which may lead to much useless talk. In order that the discussion may be of profit to those interested, a thorough understanding of the ideas of the writer of the paper is needful. Close attention should be paid to the papers, care being taken to observe just what *is* stated and what *is not* stated. Taking notes will help to keep the matter in mind, and aid in getting your thoughts well in shape, thus enabling you to present them intelligently and tersely. A long rambling discourse is of little use as it consumes time which ought to be valuable, and does not leav as clear a comprehension of the speaker's ideas as might have been conveyed in half the time. It must be borne in mind at all times just what the subject under discussion is, and caution should be exercised to keep to the subject. Unconsciously there is a tendency to drift from the subject—ideas bearing on subjects intimately related to the one under consideration constantly presenting themselves. Possibly these side issues may be of more importance than the subject itself, but such transgression will lead to further ones unless heed is given; and the result will be often a talk concerning something entirely foreign to that intended. In taking part in a discussion come right to the point and stay there. The essayist has, it is presumed, spent considerable time and effort in the production of his paper, and it is his due that it shall be attentively listened to and carefully discussed.

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*Read before the Fifth District Dental Society of the State of New Yr

A remark of Dr. Atkinson's shows how we can return value received to the writer, and it also shows the intimate relation between the paper and its discussion. He says, "It is discussion that makes an essay valuable, either by intensifying the facts contained in it, or by exposing fallacies that it may advance."

That a valuable paper should be passed by in silence is a reflection on the Society before which it is read.

The discussion should be, as far as possible, participated in by all present. Such, however, is not usually the custom, as this part of the work is left for a few to take upon themselves. There are two reasons for this state of affairs, one that the majority of people feel a hesitancy about expressing themselves publicly, either from diffidence, or through fear of being in error ; the other that the few seek to run things. The latter case is more apt to exist in the minds of the majority than in reality. Still should it exist, the silent members are to blame as they have equal privileges, and their relation to the Society makes it incumbent on them to use that privilege.

Do not stand back and complain that you are oppressed; but come forward, say your say and then, if you are "sat upon," do your grumbling. Make the discussion general.

It is very important that some plan should be followed by means of which the papers shall have more thorough discussion than is usually the case at present. The plans suggested are to appoint one or more members, to whom copies of the paper to be discussed shall be sent, to lead the discussion; to send a synopsis of each paper to each member; and to have an impromptu discussion. The first plan certainly calls directly upon somebody to prepare himself to properly discuss the paper, and assures if he does his duty, at least one thorough discussion. It would appear an excellent scheme and is to my mind the best manner in which to conduct the discussion as far as scientific papers are concerned. It would hardly seem necessary to apply it to other than those of a scientific nature.

Of the second, or synopsis idea, the question may be asked, would not this revealing of the ideas of the paper lead to a meagre attendance?

Possibly so, but it ought not to be so; it should rather stimulate attendance. It too, would apply more particularly to scientific papers. To prepare a synopsis of a paper of the nature of this one would indeed be a task. The third plan, open discussion, would seem to fill the bill for the average subject, as the average paper concerns something with which the majority are more or less familiar. A few minutes thought upon each of the subjects on the programme would probably bring out some idea which, presented at the proper time might be of profit to those present. A slight hint will sometimes open the way to an excellent discussion.

Whatever the method employed to provoke discussion, when taking part remember to talk right to the point. You all have doubtless listened to the man who "scarcely knows what to say," and then been inflicted with an hour's talk, more or less, on all sorts of subjects relevant and otherwise. Think of him and do not "go thou and do likewise."

CYST OF THE JAW, ASSOCIATED WITH EYE TROUBLE.

By Dentist **Brandenburg**, Cologne.

About a year ago a father consulted me about his boy, aged eight years, and requested me to take the little patient in hand. The child complained of pain in a temporary right lower molar. On examination I noticed on the same side over the upper temporary molars a marked swelling of the cheek, the right eye was constantly filled with tears, as was also the left but not to the same extent.

The father told me that the boy had recently been under the treatment of an oculist for inflammation of the lachrymal canal and that this was the cause of the swelling of the cheek. The oculist had ordered various medicaments, and also provided the patient with spectacles. During the development of the swelling which disfigured the face there had not been much pain. On closer examination I discovered unmistakable fluctuation and I was convinced that in this case there was a cystic formation on the right side of the jaw. During the expansion pressure was exerted upon the tear canal in consequence of which the lachrymal secretion was stopped. I immediately made a free incision into the cyst from which flowed a stream of that peculiar light brown serous fluid which one always finds in cystic tumours.

By means of a probe, introduced into the cavity, I found that the walls had extended in the direction of the nose, as far as the orbits, and behind as far as the tuberosity. In the treatment of cysts I generally consider that the most suitable method is to scrape away the inner surface with a sharp spoon, and to secure a good opening ; then, after extraction of suspicious teeth and roots, the healing may be left to nature. In this case, however, I thought it advisable to pack in iodine upon lints which was frequently renewed. The effect of this treatment was very satisfactory. As, later, the opening appeared inclined to close, a portion of the outer wall was exised, and the healing left to time. When I again saw the child in the course of six months the shape and appearance of the face were normal, and the external opening had closed by granulation so that I could no longer introduce an ordinary probe. The overflow from the eyes had completely ceased, although the little patient was, of course, no longer under the oculist's treatment.

According to my view the secretion of tears in the left eye was only a reflex appearance. The existence of the cyst in this case must be, without doubt, ascribed to the irritation of of two milk molars existing under the swelling, although it it must not be forgotten that in very young patients, whose permanent teeth are developing, other conditions must also be taken into consideration.

After the eruption of the permanent teeth it may be possible to obtain some further information.

British Journal of Dental Science.

LONDON, SEPTEMBER 15th, 1893.

THE COMING SESSION.

The present number of the *Journal* contains such details of the various Schools and Hospitals as may prove interesting and useful to those of the coming generation who are destined to devote themselves to dental work. Within the next month we may believe that the ranks of dental students will be reinforced by another batch of recruits, most of them fresh from their mechanical pupilage, and all of them, we will hope, animated by an enthusiasm for the new work before them. The times are changing, and although the process may be so gradual as not to excite marked attention, it is well for the young student to recognise the seriousness of the training before him, and the importance of thoroughness in the preparation for his future life-work. To those who are able to compare the present curriculum and examination with what obtained, say, only ten years ago, it is evident that the modern requirements of professional education, with the inevitable tendency to a stiffening of the examinational tests, are quite as marked in the dental as in other departments, where the State considers that some proper provision should be made for the benefit of the public. Many regret that whilst enforcing a "hall-mark" by which the genuine article shall be known, the State does not sufficiently interfere to prevent the "base" from passing into currency ; but this leakage is a matter which time may ultimately remedy ; and meanwhile a certain portion of the public must continue to suffer and learn by bitter experience, We have heard parents and guardians express doubts as to whether it was wise or justifiable to start youths, under their control and to whom they were responsible, upon what seemed to them an unequal contest. We have discussed this question before, and still remain of the opinion that matters are mending, and that taken altogether the practice of dentistry may be regarded as offering a favourable field for the employment of a professionally-minded man's best energies. As in other similar walks in life there is room for a certain number to rise to eminence; but the majority should distinctly realise that although there exists in dentistry the probability of securing an honourable competence. the excitement and glamour of the so-called success usually looked for in other, more commercial pursuits, will to a large extent be found absent.

With regard to the opportunities now existing for the acquirement of professional knowledge, we believe that the various Hospitals and Schools of the United Kingdom are in good working order. Both in London and the Provinces the arrangements for teaching have been brought to a state of perfection not before attained, and a healthy spirit of emulation will secure a maintenance of this condition.

To the individual student we can only repeat what we have said before. We would recommend a steady and systematic application to study and operative work, so that at the close of the hospital training there shall be no necessity to make up for lost time when brought face to face with the Examiners, upon whose decision must rest the granting of the Diploma which constitutes the victor's reward.

BACTERIA IN THE STOMACH.—It has sometimes been urged in defence of micro-organisms that they may play some useful part in the process of digestion. According to some experiments carried out by Gillespie, and reported in *The Journal of Pathology and Bacteriology*, the lactic acid, which appears during the first stages of digestion, is due to the action of micro-organisms. This author also states that although bacteria are of no aid to peptic digestion, and a hindrance to the pancreatic ferment if in quantity in the duodenum, they still are of great use in the small intestine, where they control putrefaction. This they do by keeping the contents acid. In the large intestine the secretion is so alkaline that the putrefactive organisms re-assert themselves. As many as twenty-four varieties were obtained from the contents of the stomachs of different individuals, and some were tested with regard to their resistance to acids and digestion. It was found that hydrochloric acid when combined with proteids has little inhibitory power on organisms in comparison with free hydrochloric acid.

THE BLOOD IN NITROUS OXIDE ANÆSTHESIA.—Dr. Oliver and Mr. Garrett, of Newcastle, have been carrying out an analysis of the gases of the blood in animals under the influence of the various anæsthetic agents. Rabbits were employed in the experiments, and arterial blood was generally drawn from the external iliac artery, at different stages of the anæsthesia. Paul Bert and De St. Martin had previously shown that as the animal becomes more profoundly anæsthetised the amount of oxygen gas in the blood diminishes, whilst the carbonic acid increases, and the experiments of the present authors support this view. Nitrous oxide destroys rabbits very quickly, and the anæsthesia was very rapidly induced. According to the analysis of the blood in such cases, there is a marked deficiency of oxygen, but no excess of carbonic acid. Nitrous oxide and nitrogen are present in considerable quantity. Danger probably depends upon the deficiency of oxygen for though the amount of carbonic acid is smaller compared with what is found when other anæsthetics are used, yet it is present in very large quantity relatively to the amount of oxygen associated with it in the blood.

CLEFT PALATE AFTER OPERATION.—Mr. C. J. Bond, of Leicester, publishes, in the *Lancet*, a paper on the ultimate condition of these cases, and his remarks serve to bear out the view commonly held by dentists. He has never seen a patient who had been the subject of an operation for considerable cleft of the hard and soft palate, in whom one could not detect a more or less nasal element in the speech. He thinks that the shortening of the soft palate may be partly due to cicatricial action at the line of junction; and the amount of tension is associated in a degree with the amount of infection of the wound which occurs at the time of healing. It is less in cases of perfect primary union. In order to increase the mobility, pliability, and possibly the depth of the new velum, Mr. Bond would suggest the "massage of the palate" by a mechanical gentle stretching of the velum by the finger, pressing it backwards and upwards, and thus moulding it into shape to shut off the nasal cavity. The patient should also practice forcible expulsion of air through the nose with the mouth shut, and at the same time try to suddenly stop the current by raising the velum. Another exercise is to draw a series of quick deep inspirations with the mouth widely open, as this action is associated with a marked raising of the soft palate.

DEATH CERTIFICATION.—A select Committee has been sitting to inquire into the defects of the existing law; and two reports have just been submitted to Parliament. It has been made quite clear that the present system of registration affords facility for fraud, and that especially in the cases of children said to be still-born, some new departure is necessary. Any person who cares to incur the risk of a penalty of £10, can give a certificate of stillbirth, in a case in which a child's death has been effected by violence or neglect, and apparently there would be but little chance of detection. With regard to this condition of things, the Committee recommends that still-births which have reached the stage of development of seven months should be registered upon the certificate of a registered medical practitioner, and that it should not be permitted to bury or otherwise dispose of the still-birth until an order for burial has been issued by the registrar.

RICKETS IN AUSTRALIA.—It has been generally believed that this disease did not occur in the colonies; but it seems that although the acute form and bony deformities are rare, mild cases are fairly common. At a recent discussion at the Medical Society of Victoria, Dr. Wood stated that rachitis in its early stages is a very common complaint amongst colonial bottle-fed children. In his paper, Dr. Wood demonstrated that water is just as efficient as barley water, lime water, or gelatine, in arresting the massive clotting of cow's milk. The percentage of fat in milk varies at different stages of milking. The free milk contains about 2 per cent., and the strippings about 9. If the latter be sufficiently diluted with water to render the proteids digestible, the fat is reduced only to the percentage of human milk. It was stated that condensed milk is very apt to be deficient in fat, many brands, indeed, being manufactured from skim milk.

A PALATAL DEFORMITY.—In the Epitome of the *British Medical Journal* is a note on torus palatinus, a new stigma of degeneracy recently described by Stieda. The name is applied to a thickening of the hard palate in the region of the longitudinal suture The condition varies greatly in different cases, and is nearly always asymmetrical. The mucous membrane is often whitish and uneven, and the line of the suture usually appears as a shallow furrow. Näcke found the condition in nearly 22 per cent. of 1449 persons examined ; it was more common amongst the insane and criminals, the increase in the frequency of its occurrence being parallel to that of the other signs of degeneration. He thinks that nutritional defects of a rachitic nature may have to do with the causation.

The Chicago Dental Congress.—Interesting reports have come to hand in the form of daily editions of some of the American Dental Journals. These reflect great credit upon the energy of the editors, for they seem to give one a very good idea of the proceedings from day to day. At the general Session on the fifth day, Dr. Marshall, the Treasurer announced that the number of foreign guests registered was 115; of Americans, 982, making a total of 1097. The amount contributed was, so far, 13,231 dollars. On the following day the total number registered as attending the Congress rose to 1116. One of the last matters dealt with before the meeting closed was the report of the Committee on Prize Essays. It recommended that the gold medal for the best essay on Oral Hygiene, should be awarded to Dr. George Cunningham, of Cambridge, and the President accordingly affixed the prize to the recipient's coat, accompanying the act with a few fitting remarks. Dr. Cunningham expressed his gratification at having received the prize, and our readers will doubtless share in the satisfaction to be derived from the contemplation of a British success.

Abstracts of British & Foreign Journals.

DEVITALIZATION OF THE DENTAL PULP.

By M. P. Harrington, D.D.S.

Under what circumstances is it necessary to destroy the pulp? What are the conditions for removing this part of the tooth? Let us look to the deep-seated caries, and in diagnosing for exposed pulps, note, first, age of patient. The pulp chamber is much larger in children than in adults, and much smaller in advanced life than in middle age. As we advance in years the pulp chamber becomes smaller, owing to secondary dentine forming therein. In well-advanced life, secondary or osteodentine has been formed to such an extent as to almost fill up the pulp chamber. Next, the situation of caries. Take, for instance, an incisor; the pulp chamber is more easily reached from the palatal surface than from the masticating or approximal—of a bicuspid, from the mesial approximal; of a molar, from the masticating surface. The pulp chamber assumes very much the shape of the individual tooth, and in excavating and removing the carious portion, we need to be cautious and on our guard never to uncover the pulp. It is much better to leave a small quantity of half decalcified dentine over it than to remove and substitute other artificial cappings. Then, again, the character of the caries. In the black kind we do not expect it to extend to any great depth, and, as a rule, do not look for exposed pulps in this class as we do in the brown or white kind. Nor do we look for exposed pulps in superficial or middle, but in deep-seated caries—in the kind involving the deep structure of the dentine.

A patient presents himself or herself, as the case may be, and upon examination we find a carious tooth with exposed pulp, and the question presents itself, Shall we cap the pulp and fill, or shall we destroy and remove it and then fill? It is advisable to destroy it when it is necessitated by uncontrollable irritation and exposure; when more and increased pain is given in the recumbent position; when there is congestion and throbbing and jumping pain; when it is intermittent with paroxysms of neuralgia; when the tooth is off colour and there is loss of sensation in cavity; when a pulp stone is giving trouble and when preparing the tooth for crown work requiring a pivot tooth, so called; also when the physical condition warrants, such as a continued state of fatigue, the period following the typhoid state, in one subject to malaria, or those employed in unhealthy occupations and exposed to great thermal changes. The different temperaments aid us greatly in deciding what pulps to destroy and what to try and keep alive. Experience teaches that with lymphatic people who have large, bulky teeth, with neither strength, density, or good quality, whose teeth are poor, and whose recuperative power is tardy and feeble, it is almost impossible to save the pulp when exposed to any extent, and from prognostic results it is advisable to destroy and remove it before attempting to restore the tooth to usefulness.

When called upon to devitalize the pulp of a tooth the manner of procedure will depend upon conditions, whether the exposure be of long standing or of recent, for if of long standing there probably has been pathological change of the pulp, rendering a certain course of treatment necessary before that of devitalization ; whether, if there be such change, it be in the form or state of congestion or hyperæmia; whether hypertrophy has resulted ; whether a portion of the pulp be in putrescent condition ; for while the condition will, to most practitioners, indicate that devitalization is best and for the most part will result, still there are other steps indicated as preliminary or preparatory. We should make it our object to devitalize the pulp with the least possible pain to our patients, and with as little loss of time to ourselves as may be. Then, again, we should avoid complication ; for instance discolouration caused by infiltration of the tubules by disorganized blood ; and, again, by the complication and irritation of surrounding membranes. Hence, when the case has been decided and we have determined to destroy the pulp, we should endeavour to reduce the inflammation and restore the normal condition as nearly as we may deem desirable, and then proceed to the work in hand. There are several processes by which this result is reached, namely : that of immediate extirpation by the use of instruments direct while the patient is in a state of anæsthesia, or by the use of local or circumscribed anæsthesia, as for instance, muriate of cocaine —crystals or powder—dissolved with carbolic acid in the carious cavity, in the anterior teeth, and allowed to remain from twenty to thirty minutes. This will, in many instances produce anæsthesia sufficient to extirpate the pulp and cause little pain in the operation. Another and what we may call the heroic method, is where the exposure is large and of easy access—we are speaking now of single rooted teeth:—To shape a piece of orange wood to fit the canal as near as may be ; saturate it in carbolic acid and drive it quickly into the canal to the apex. This is a very convenient method to destroy the pulp and saves time, but is rather rough on the patient. Another method is to rotate the tooth or remove it, cleanse the canal and replace it in the socket, under antiseptic influences, and hold it there with ligatures. This method we do not approve of—it being painful, besides running the risk of losing the tooth from replantation. And still another method, which is more universally employed, is by the use of arsenious acid. When advisable, apply the coffer dam, or otherwise keep the cavity dry, and remove the extraneous matter and carious portion so as to expose the pulp and place the agent directly in contact with it, being careful to use no pressure upon it, and cover it with some material to prevent it working out of the tooth and destroying the surrounding tissue. Cotton saturated with sandarac varnish, is a good material for this purpose, but a covering made of gutta percha or temporary stopping is preferable. Of all the methods employed for devitalizing the pulp, perhaps this has the preferance and is generally used. We find a thick paste composed of arsenious acid, morphine, oil of cloves, cosmoline and finely cut, absorbent cotton, to be an excellent agent as a devitalizing compound. The application should remain in the tooth from two to four days, when it should be removed and the pulp chamber fully opened and the pulp entirely removed to the apical foramen. It may be found difficult to remove all the tissue at one sitting, if so, give it a day or two longer to slough off. Make a little thread of absorbent cotton, saturate it in oil of cloves and pack into the canal and place a temporary filling in the tooth. On the following day, or second following, remove the filling. Withdraw the cotton. and if there is no bad odour therefrom, the root is fit to fill, If there is a slight one, repeat the purifying process until you get the distinct odour of the medicament used upon the cotton. Success in root filling depends very much upon the antiseptic condition of the canal, especially that part nearest the apex. Now, what shall we use as a root filling? There are lots of agents we can employ and use them with safety, taking care to carry the filling to the very end of the canal, and also to avoid pressing any through an enlarged apical foramen. In a tortuous canal we might use a thread of absorbent cotton, saturated in oil of cloves or carbolic acid, or a thread of raw cotton with cosmoline upon it. Both are good root fillings. Or we might fill with gold or tin foil where the canal is of easy access, or with gutta percha or temporarystopping or oxychloride of zinc or phosphate of zinc. Perhaps a small piece of temporary stopping at the apical end and the balance of the canal filled with phosphate of zinc cement, makes as desirable a root filling as we can have. Having completed the root filling, we can fill the crown with whatever material is indicated, and when other conditions are favourable or normal, we can look forward to the tooth being of service for many years to come.

Dominion Dental Journal.

BRITISH JOURNAL OF DENTAL SCIENCE.

DENTAL STUDENTS' SUPPLEMENT. SEPTEMBER 15TH, 1893.

I.—THE LICENSING CORPORATIONS.

Comparative Summary of Regulations for the License in Dental Surgery.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Faculty of Physicians and Surgeons, Glasgow.	Royal College of Surgeons, Ireland.
1—PRELIMINARY EXAMINATION	Compulsory on all who commenced their Professional Education after July 22nd, 1878. Must be registered as a Dental Student at the office of the General Medical Council, 299, Oxford St., London, W.	Compulsory on all who commenced their Professional Education after July 22, 1878.	Compulsory on all who commenced the Professional Education after August 1st, 1878.	Compulsory on all, except those who have passed one equivalent examination.
2—Age at which the Candidate may present himself	Twenty-one.	Twenty-one.	Twenty-one.	Any age, but diploma cannot be granted until he is twenty-one.
3—DURATION OF PROFESSIONAL EDUCATION	Four years subsequent to registration.	Four years.	Four years.	Five years.
4—COURSES OF LECTURES, &c., to be attended at a recognized School:—				
Anatomy	One course.	One Winter course.	One course of 6 months.	One course of 6 months.
Physiology	One course.	One course of 6 months.	One course of 6 months.	One course of six months
Surgery	Ditto.	One Winter course.	Ditto.	Ditto.
Medicine	Ditto.	Ditto.	Ditto.	Ditto.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Faculty of Physicians and Surgeons, Glasgow.	Royal College of Surgeons, Ireland.
Chemistry	Instruction.	One Winter course.	One course.	One six months' course.
Materia Medica	Instruction.	One three months' course.	Ditto.	One three months' course
Dissections and Demonstrations	Twelve months.	Twelve months.	Twelve months.	Six months.
Practical Chemistry and Metallurgy	Instruction.	One three months' course.	One course.	Three months.
Practice of Surgery	Two Winter Sessions.	One six months' course.	One course of 6 months.	Three months.
Clinical Lectures in Hospital........................	Two Winter Sessions.	One six months' course.	One course of 6 months.	Nine months.
Dental Anatomy and Physiology	Two courses.	One course.	24 Lectures (Six months.)	Twelve Lectures or Demonstrations.
Dental Surgery and Pathology	Ditto.	Ditto.	20 Lectures.	Twelve Lectures.
Metallurgy	One course.			Twelve Lectures.
Dental Mechanics	Two courses.	One course.	Demonstrations.	Twelve Lectures.
Practical Instruction in Mechanical Dentistry...	Three years under a competent Practitioner, all of which may be previous to Registration.	Three years under a registered Dental Practitioner.	Three years under a Registered Dental Licentiate.	Three Years under a Registered Practitioner.
Practice of Dental Surgery in a recognized Dental Hospital, or in the Dental Department of a recognized General Hospital	Two years.	Two years.	Two years.	Two years.
5—FEE	£10 10s. over the above stamp duty.	£10 10s.	£10 10s.	£10 10s.
6—LEAST period during which unsuccessful Candidates are referred to their	Six months, subject to the decision of the Board.	Three months.	Six months.	Six months.

7—**Particulars of Examination**	(A) *Written.* On General Anatomy and Physiology, General Pathology and Surgery, Dental Anatomy and Physiology, and Dental Pathology and Surgery. (B) *Practical.* (1) On the treatment of Dental Caries, and may be required to prepare and fill cavities with Gold or Plastic filling or material, or to do any other operation in Dental Surgery. (Candidates must provide their own instruments.) (2) On the Mechanical and Surgical treatment of the various irregularities of children's teeth. (3) On Mechanical Dentistry. (c) *Oral.* Comprises the several subjects included in the curriculum of professional education, and is conducted by the use of preparations, casts, drawings, &c.	*Written and Oral*: First Part—Anatomy, Chemistry, Physiology. Second Part—Surgery, Medicine, Therapeutics, and special subjects, of Dental Anatomy and Physiology, Dental Surgery, Pathology, and Dental Mechanics. Registered Medical Practitioners are examined on the specialsubjects only. Practical Clinical Exam. given in Dental Surgery, Pathology & Mechanics.	*Written, Oral & Practical*: 1st part—Anatomy, Physiology, Chemistry, and Metallurgy. Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects. Practical Examination at a Dental Hospital. Candidates are to bring Excavator, Files, and Plugging Instruments.	*Written and Oral*: On all the subjects of the Curriculum. Preparations, Microscopes, and other appliances. Sine Curriculo:— Candidates in practice before July, 1878, and whose names are on a Dental Register are admitted to the examination *Sine Currriculo.*
8—**Dates of Examinations**	May and November.	First examination.— Tuesday, May 1, 1894, " July 24, 1894. Second exam. on Thursday following.	1893 October 4—6. 1894 May 3—5.	Feb. May & Nov. Candidates must be registered Dental Practitioners in practice before 1878.
For further information apply to	Mr. F. G. Hallett, Examination Hall, Victoria Embankment, London, W.	Jas. Robertson, Solicitor, Clerk of College, 1, George Square, Edin.	Alex. Duncan, Esq., Faculty of Physicians and Surgeons, Glasgow.	G. F. Blake, Esq., J.P., Royal College of Surgeons, Dublin.

II. PRELIMINARY EXAMINATION.

REGULATIONS OF GENERAL MEDICAL COUNCIL.

No person shall be allowed to be registered as a Medical or Dental Student unless he shall have previously passed (at one or more Examinations) a preliminary Examination in the subjects of General Education as specified in the following List:—

⁂ Regulations in operation from January 1, 1892.

(a) English Language, including Grammar and Composition.
(b) Latin, including Grammar, Translation from specified authors, and translation of easy passages not taken from such authors.
(c) Mathematics, comprising (*a*) Arithmetic; (*b*) Algebra, as far as Simple Equations, inclusive; (*c*) Geometry, the subject matter of Euclid, Books I., II., and III., with easy deductions.
(d) One of the following optional subjects:—
  (*a*) Greek, (*b*) French, (*c*) German, (*d*) Italian, (*e*) any other Modern Language (*f*) Logic.

List of Examining Bodies whose Examinations fulfil the conditions of the Medical Council as regards Preliminary Education, and entitle to registration as Medical or Dental Students.

I. UNIVERSITIES IN THE UNITED KINGDOM.

UNIVERSITY OF OXFORD:—

1. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects, Greek, French, German.
2. Senior Local Examinations; Certificate to include Latin and Mathematics.
3. Responsions.
4. Moderations.
5. Examinations for a degree in Arts.

UNIVERSITY OF CAMBRIDGE:—

6. Junior Local Examinations: Certificates to include Latin and Mathematics, and also one of the following optional subjects:—Greek, French, German.
7. Senior Local Examinations; Certificate to include Latin and Mathematics.
8. Higher Local Examinations.
9. Previous Examination.
10. Examination for a Degree in Arts.

⁂ The Council will not in future accept any Certificate of pass in Preliminary Examination in General Education, unless the whole of the subjects included in the Preliminary Examination required by the Council for Registration of Students of Medicine have been passed at the same time; but this rule shall not apply to those who, previous to January 1, 1892, have passed a part of any Preliminary Examination recognized by the Council.

Provided that a University Examination required for graduation in Arts, wherein the specified subjects of General Education are included, may be recognized for the purpose of registration.

UNIVERSITY OF DURHAM:—

11. Examination for Certificate of Proficiency.
12. Examination for Students at the end of their first year.
13. Examination for a Degree in Arts.

UNIVERSITY OF LONDON :—

14. Matriculation Examination.
15. Preliminary Scientific (M.B.) Examination.
16. Examination for a Degree in Arts or Science.

VICTORIA UNIVERSITY :—

17. Preliminary Examination; Latin to be one of the subjects.
18. Entrance Examination in Arts, to include all the subjects required.

UNIVERSITY OF EDINBURGH :—

19. Local Examinations (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German.
20. Local Examination (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German.
21. Preliminary Examination for graduation in Science or Medicine and Surgery.
22. Examination for a Degree in Arts.

UNIVERSITY OF ABERDEEN :—

23. Local Examinations (Junior Certificate); Certificate to include all the subjects required.
24. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German.
25. Preliminary Examination for graduation in Medicine or Surgery.
26. Examination for a Degree in Arts.

UNIVERSITY OF GLASGOW :

27. Local Examinations (Junior Certificate); Certificate to include all the subjects required.
28. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following subjects:—Greek, French, German.
29. Preliminary Examination for graduation in Medicine or Surgery.
30. Examination for a Degree in Arts.

UNIVERSITY OF ST. ANDREWS:—

31. Local Examination (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German.
32. Local Examinations (Junior Certificate); to include all the subjects required.
33. Preliminary Examination for graduation in Medicine or Surgery.
34. Examination for a Degree in Arts.

UNIVERSITY OF DUBLIN.

35. Public Entrance Examination.
36. General Examination at end of Senior Freshman year.
37. Examination for a Degree in Arts.

ROYAL UNIVERSITY OF IRELAND:—

38. Matriculation Examination.

OXFORD AND CAMBRIDGE SCHOOLS' EXAMINATION BOARD:—

39. Certificate, to include the following subjects, an adequate knowledge of English Grammar and Orthography, as shown in the course of the Examination, to the satisfaction of the Examiners, being held as conforming to the requirements of the Medical Council in regard to those subjects:
(*a*) Arithmetic, including Vulgar and Decimal Fractions;
(*b*) Algebra, including Simple Equations;
(*c*) Geometry, including the first two books of Euclid;
(*d*) Latin, including Translation and Grammar;
(*e*) Also one of these optional subjects, (Greek, or any Modern Language or Logic.)

II.—OTHER BODIES NAMED IN SCHEDULE (A) TO THE "MEDICAL ACT."

APOTHECARIES' SOCIETY OF LONDON:—

40. Examination of Arts.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH:—

41. Preliminary (combined) Examination in General Education.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW:—

42. Preliminary Examination in General Education.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS IN IRELAND.—

43. Preliminary Examination; Certificate to include Mathematics.

III.—EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE "MEDICAL ACT" (1858).

COLLEGE OF PRECEPTORS:—

44. Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and either a Modern Language, or Greek, or Logic, having been taken.
45. Preliminary Examination for Medical Students.

INTERMEDIATE EDUCATION BOARD OF IRELAND:—

46. Junior Grade Examination
47. Middle Grade Examination
48. Senior Grade Examination
} Certificate in each case to include all the subjects required.

EDUCATIONAL INSTITUTE OF SCOTLAND:—

49. Preliminary Medical Examination.

SCOTCH EDUCATIONAL DEPARTMENT:—

50. Leaving Certificates in each Grade and in Honours.

IV.—INDIAN, COLONIAL, AND FOREIGN UNIVERSITIES AND COLLEGES.

REGISTRATION OF DENTAL STUDENTS.

Every Dental Student shall be registered in the manner hereinafter prescribed by the General Medical Council.

No Dental Student shall be registered until he has passed a Preliminary Examination, as required by the General Medical Council, and has produced evidence that he has commenced Dental Study.

The commencement of the course of Professional Study recognised by any of the Qualifying Bodies shall not be reckoned as dating earlier than fifteen days before the date of Registration.

Every person desirous of being registered as a Student shall apply to the Branch Registrar of the division of the United Kingdom in which he is residing, according to the prescribed form, which may be had on application to the several Qualifying Bodies, Medical Schools, and Hospitals; and shall produce or forward to the Branch Registrar a Certificate of his having passed a Preliminary Examination, as required by the General Medical Council, and evidence that he has commenced Medical Study.

Students who commenced their professional education by apprenticeship to Dentists entitled to be registered, or by attendance upon professional lectures before July 22nd, 1878, (when Dental Education became compulsory,) shall not be required to produce evidence of having passed a Preliminary Examination.

Candidates for a Diploma in Dental Surgery shall produce certificates of having been engaged during four years in Professional Studies, and of having received three years' instruction in Mechanical Dentistry from a registered Practitioner.

One year's *bona fide* apprenticeship with a registered Denntal Practitioner, after being registered as a Dental Student, may be couted as one of the four years of professional Study.

The three years of instruction in Mechanical Dentistry, or any part of them, may be taken by the Dental Student either before or after his registration as a Student; but no years of such mechanical instruction shall be counted as one of the four years of Professional Study unless taken after registration.

III.—EDUCATIONAL BODIES.

LONDON.

DENTAL HOSPITAL OF LONDON, AND LONDON SCHOOL OF DENTAL SURGERY LEICESTER SQUARE.

HOSPITAL STAFF.

Consulting Physician :—

Sir Richard Quain, Bart., F.R.S., M.D., F.R.C.P., LL.D.
Consulting Surgeon—Christopher Heath, F.R.C.S.

Consulting Dental Surgeons:—

Sir John Tomes, F.R.S., F.R.C.S., L.D.S. ;
T. Arnold Rogers, M.R.C.S., L.D.S.

Dental Surgeons.

9 a.m.—Monday ... C. E. Truman, M.A., M.R.C.S., L.D.S.
,, Tuesday ... R. H. Woodhouse, M.R.C.S., L.D.S.
,, Wednesday George Gregson, M.R.C.S., L.D.S.
,, Thursday... Storer Bennett, L.R.C.P., F.R.C.S., L.D.S.
,, Friday ... W. Hern, M R.C.S., L.D.S.
,, Saturday . L. Matheson, L.D.S.

Assistant Dental Surgeons.

,, Monday ... J. F. Colyer, M.R.C.S., L.R.C.P., L.D.S.
,, Tuesday ... W. B. Paterson, F.R.C.S., L.D.S.
,, Wednesday E. Lloyd Williams, L.R.C.P., M.R.C.S., L.D.S.
,, Thursday... C. F. Rilot, M.R.C.S., L.D.S.
,, Friday ... H. Baldwin, M.R.C.S., L.D.S.
,, Saturday... H. Lloyd Williams, M.R.C.S., L.D.S.

AFTERNOON STAFF.

1.30 p.m.—Monday ... A. C. Woodhouse, L.D.S.
,, Tuesday ... W. H. Dolamore, M.R.C.S., L.R.C.P., L.D.S.
,, Wednesday F. J. Bennett, M.R.C.S., L.D.S.
,, Thursday... W. H. Woodruff, L.D.S.
,, Friday ... Cornelius Robbins, L.D.S.

Administrators of Anæsthetics.

9.30 a.m.—Monday ... C. Carter Braine, F.R.C.S., L.R.C.P.
,, Tuesday ... Frederic Hewitt, M.D.
,, Wednesday...Henry Davis, M.R.C.S.,L.S.A.
,, Thursday... F. Woodhouse Braine, F.R.C.S.
,, Friday ... Dudley W. Buxton, M.D., B.S., M.R.C.P
,, Saturday...G. H. Bailey, M.R.C.S.
2.0 p.m. Daily ... George Rowell, F.R.C.S.

Demonstrators.

E. Briault, L.D.S.
T. H. Clarence, L.D.S.
E. Gardner, L.D.S.
George Hern, M.R.C.S., L.R.C.P., L.D.S.

Medical Tutor—W. H. Dolamore, M.R.C.S., L.R.C.P., L.D.S.

5 *House Surgeons and* 3 *Assistant House Surgeons attend daily.*

Demonstrations.—Demonstrations will be given every morning during the early part of each Session; and at the end of the Course those Gentlemen who have attended the Demonstrations to the satisfaction of the Staff, will be permitted to perform operations at the Hospital under the supervision of the Medical Officers and the House Surgeon.

Dresserships for Cases of Extraction.—The appointments are held for one month, and consist of six senior Dresserships for extractions under anæsthetics and eighteen Junior Dresserships for ordinary extractions.

The Senior Dressers will be selected from those pupils only who have entered fully both to the practice and lectures of this Hospital, and also to the Course required by the College of Surgeons for the Licence in Dental Surgery at one of the General Hospitals.

The Hospital is lighted throughout by electricity. The New Mechanical Laboratory is now open. The Laboratory is carefully fitted with all the requirements of a modern Dental Laboratory, and is lighted with Electric Light for foggy weather. Each bench is also well lighted by daylight. The workroom is under the superintendence of A. J. WATTS, L.D.S.I., who will attend daily from 9 a.m. to 6 p.m. to give practical instructions to students.

The WINTER SESSION will commence on October 2nd, 1893.
The SUMMER SESSION will commence in May, 1894.

LECTURES.

Dental Surgery and Pathology.—Mr. STORER BENNETT.
Dental Anatomy and Physiology (Human and Comparative).—Mr. ARTHUR UNDERWOOD.
Mechanics of Dentistry.—Mr. DAVID HEPBURN.
Metallurgy in its application to Dental Purposes.—Dr. FORSTER MORLEY.

MEDICAL TUTOR.

The Medical Tutor attends four days in the week, from 5 to 7 p.m., for two months previous to the Annual Examinations. His classes are open to all Students, and are intended to assist those who are preparing for their examinations at the College of Surgeons; generally speaking, to guide and direct the studies of the pupils, and prepare them in the subjects for the Examinations.

FEES.

GENERAL FEES FOR THE SPECIAL LECTURES REQUIRED BY THE CURRICULUM.

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery, two Courses on Mechanical Dentistry, and one Course on Metallurgy, £15 15s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £31 10s.

Students who perform Operations for filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the Curriculum, vary from £50 to £60.

PRIZES.

The Prize-day is held in July.

1. A Scholarship of the value of £20 has been founded by Sir Edwin Saunders, and will be awarded at the close of each Summer Session.
2. Prizes are awarded by the Lecturer for the best examinations in the subjects in their respective courses, at the end of the Summer and Winter Sessions.

3. Prize in Operative Dentistry, in the competition for which each candidate is entrusted with the care of a mouth, which he shall, if not impracticable, set thoroughly in order.

4. A prize of the value of five guineas is also given by Messrs. Ash & Sons for the best essay on a surgical subject connected with the mouth.

Note.—The Medical Committee have resolved "that the holder of the Saunders Scholarship be admitted without additional fee to the extra year of Hospital Practice."

The Dean requests that all communications relating to the Medical School may be addressed to him at the Hospital, where he will attend in the afternoons, from Sept. 26th to Oct. 2nd inclusive, from 5 till 6 o'clock, or on Wednesday mornings from 10.30 till 12.

MORTON SMALE, L.R.C.S., L.D.S., M.S.A., *Dean.*

NATIONAL DENTAL HOSPITAL AND COLLEGE, GREAT PORTLAND STREET, W.

FOUNDED 1861.

HOSPITAL STAFF.

Consulting Physicians.

Sir W. H. BROADBENT, Bart., M.D., F.R.C.P.
Sir B. W. RICHARDSON, M.A., M.D., F.R.S.

Consulting Surgeons.

Sir SPENCER WELLS, BART., F.R C.S. CHRISTOPHER HEATH, F.R.C.S.

Consulting Dental Surgeon.

SIR EDWIN SAUNDERS, F.R.C.S.

Hon. Visiting Physician.

JAMES MAUGHAN, M.D.

Hon. Visiting Surgeon.

E. W. ROUGHTON, F.R.C.S., &c.

Dental Surgeons.

Monday	...	F. HENRI WEISS, L.D.S., Eng.
Tuesday	...	ALFRED SMITH, L D.S., Eng.
Wednesday	...	MARCUS DAVIS, L.D.S., Eng.
Thursday	...	A. F. CANTON, L D.S., Eng.
Friday	...	H. G. READ, M.R.C.S., L.R.C.P., L.D.S. Eng.
Saturday	...	C. W. GLASSINGTON, M.R.C.S., L.D.S., Eng.

Assistant Dental Surgeons.

Monday	...	WILLOUGHBY WEISS, L.D.S., Eng.
Tuesday	...	SIDNEY SPOKES, M.R.C.S., L.D.S., Eng.
Wednesday	...	EDGAR BEVERLEY, L.D.S., Eng.
Thursday	...	T. G. READ, L.D.S., Eng. D.M.D.
Friday	...	W. RUSHTON, L.D.S., Eng.
Saturday	...	SIBLEY W. READ, L.D.S. Eng.

Anæsthetists.

Monday	...	C. H. COZENS, M.R.C.S., L.R.C.P.
Tuesday	...	A. E. BRIDGER, M.D.
Wednesday	...	PERCY EDGELOW, M.R.C.S., L.R.C.P.
Thursday	...	G. EVERITT NORTON, M.R.C.S., L.S.A.
Friday	...	JAMES MAUGHAN, M.D.
Saturday	...	C. J. OGLE, M.R.C.S., L.S.A.

LECTURERS.—(Winter Session.)

Dental Anatomy and Physiology	SIDNEY SPOKES, M.R.C.S., L.D.S., Eng.
Dental Mechanics	HARRY ROSE, L.D.S., Eng.
Dental Metallurgy	W. LAPRAIK, Ph.D , F.I.C., F.C.S.
Operative Dental Surgery ...	GEORGE CUNNINGHAM, M.A., L.D.S., Eng D.M.D.
Dental Materia Medica	C. W. GLASSINGTON, M.R.C.S., L.D.S., Eng.

At present the Hospital is open for the reception of patients every week-day, from 9 o'clock till 11 o'clock a.m. Work is continued till 2 o'clock p.m. and a proposal to open the hospital in the afternoon is under consideration.

The accommodation and fittings are in accordance with the latest requirements for efficient teaching in all branches of the Science and Art of Dental Surgery.

The Conservation Room, with space for sixty chairs, is well lighted and warmed and ventilated after approved methods.

Other large rooms are arranged as a Mechanical Laboratory (36 benches). Special Demonstration Room, Students' Common Room, &c.

There are also a Metallurgical Laboratory, Library and Museum. The Waiting Rooms, Extraction Rooms and Lecture Hall are on the ground floor.

The building is lighted throughout by electricity, and there is also a current for motors in the Stopping Room.

Each Student on entering the School passes through a preliminary course under the care of a Demonstrator, and all the members of the Staff take part in chair-side teaching.

Dresserships in the Extraction Room.

These appointments are re-arranged every two months. The respective dressers for each day are required to be in attendance from 9 o'clock till the conclusion of the practice ; and they will be under the direction of the Dental Surgeons of the day, and of the House Surgeon.

The stopping rooms have accommodation for 60 chairs, and are well lighted warmed and ventilated.

Clinical Lectures and Demonstrations.

Each medical officer will give clinical lectures, when opportune, during the ensuing year. Clinical lectures will also be given from time to time on cases of special interest ; and also demonstrations upon the preparing and filling of cavities and other operations upon the teeth and contiguous parts.

The Hon. Visiting Physician and Surgeon give Demonstrations weekly, on cases of Oral Surgery, Anæsthetics, Cardiac, and Pulmonary lesions, and a member of the anæsthetic staff gives a course of lectures.

Attendance and Examination of Students.

A register is kept of the attendance of students at the Hospital Practice and lectures. An attendance of full two years at Hospital practice is required by the College of Surgeons of England ; and no schedule will be signed for any lectures of which less than two-thirds have been attended. Class examinations are held frequently during the several courses, to test the progress and attention of the pupils ; and at the end of each course of lectures a written examination is held. An insufficient attendance at lectures disqualifies the student for receiving any prize of that year.

Tutorial classes are held to prepare for the final examinations, students who have, at this school, complied with the Dental portion of the Curriculum.

LECTURES.

Winter Session, commencing on Thursday, Oct. 2nd, 1893.

Dental Anatomy and Physiology, by Sidney Spokes, M.R.C.S., L.D.S. Eng. On Tuesdays and Thursdays, at 5 p.m., during October, November, and December.

Operative Dental Surgery, by George Cunningham, M.A., D.M.D., L.D.S. Eng. On Mondays, at 6.30 p.m., during October, November and December, (Free to Students of the Hospital and College.)

Dental Materia Medica and Therapeutics, by Charles W. Glassington, M.R.C.S., L.D.S., Edin. On Tuesdays, at 7.30 p.m. during October, November and December. (Free to Students of the College.)

Dental Metallurgy, by W. Lapraik, Ph. D., F.I.C., F.C.S. On Tuesdays, at 7.30 p.m., during January, February, and March.

Dental Mechanics, by Harry Rose, L.D.S. Eng. On Mondays at 7 p.m., during January, February and March.

Demonstrations on Dental Mechanics, by W. Robinson Humby, L.D.S. Eng. On Wednesdays, at 7 p.m., during January, February, and March. (Free to Students of the College.)

Summer Session, 1893.

Dental Surgery and Pathology, by Willoughby Weiss, L.D.S. Eng. On Mondays and Thursdays, at 6 p.m., during May, June, and July.

Elements of Histology, by James Maughan, M.D., L.R.C.P., M.R.C.S. On Mondays and Thursdays, at 5 p.m., during May, June, and July. (Free to students of the College.)

FEES.

General Fee for Special Lectures required by the Curriculum of the Royal College of Surgeons of England: £12 12s.

Fees to single Courses.	One Course.	Two Courses.
Dental Anatomy and Physiology	£2 12 6	£4 4 0
Dental Surgery and Pathology	2 12 6	4 4 0
Dental Mechanics	2 12 6	4 4 0
Dental Metallurgy	3 3 0	5 5 0
*Operative Dental Surgery	2 12 6	
*Dental Materia Medica	2 2 0	
*Elements of Histology	1 1 0	
*Demonstrations on Dental Mechanics	1 1 0	

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s.

Fee for the two years' Hospital Practice required by the Curriculum, £12 12s.

⁂ This only holds good until Oct. 1st, 1894, after which the inclusive Fee will be £31 10s.

PRIZES.

An Entrance Exhibition of the value of £15 is open for competition at the commencement of each Summer and Winter Session, after an Examination in the following Subjects:—

Elementary Physics (Statics, Dynamics and Electricity). Examiner—W. H. Coffin, Memb. Phys. Doc. and Inst. Elect. Engineers.

Physiology. (The Functions of Respiration, Circulation and Digestion.) Examiner—James Maughan, M.D.

Osteology. (Bones of the head.) Examiner—E. W. Roughton, F.R.C.S.

Chemistry. Examiner—Wm. Lapraik, Ph.D., F.I.C., F.C.S.

Dental Mechanics. (Theoretical and Practical). Examiners—Harry Rose, L.D.S., Eng., W. R. Humby, L.D.S., Eng.

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* These Lectures are free to Students who have fully entered for the Special Lectures.

Six Prizes in Medals, are open for competition among the students of the Colleges, at the end of each Course of Lectures, on the following subjects, viz.: Dental Anatomy, Dental Surgery, Dental Mechanics, Metallurgy, Operative Dental Surgery, and Dental Materia Medica.

Certificates of Honour will be awarded to those Students who show superior proficiency in any of the classes.

The Rymer Gold Medal for General Proficiency, value £5, will be awarded annually to the most distinguished Student of the year. His general conduct and attendance must have been in every respect satisfactory. At the time of the special examination for the Rymer Medal, the Student must not hold any qualification. The Medal will be awarded on the understanding that the Student completes the Dental Curriculum.

The Ash Prize, value £3 3s. in cash for the best Thesis on a subject in Dental Surgery.

The public Distribution of Prizes will take place during the Winter Session.

SIDNEY SPOKES, *Dean*.

GUY'S HOSPITAL DENTAL SCHOOL.

Dental Surgeon.—F. NEWLAND-PEDLEY, F.R.C.S., L.D.S. Eng.
Senior Assistant Dental Surgeon—W. A. MAGGS, L.R.C.P., M.R.C.S., L.D.S.E.

FEES.

The fee for the two years' Hospital Practice, required by the Royal College of Surgeons for the L.D.S., including lectures, is 30 guineas. Dental Students are also required to receive two years' instruction in a General Hospital, the fee for which in Guy's Hospital Medical School is £60, with a reduction of 12 guineas in the case of those students who have obtained certificates of instruction in Chemistry, Practical Chemistry, and Materia Medica. No arrangements are made for short periods of Instruction, or special Courses of Lectures.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER, DEVONSHIRE STREET, ALL SAINTS.

Consulting Physicians:

HENRY SIMPSON, M.D., M.R.C.S. | D. J. LEECH, M.D., F.R.C.P.

Consulting Surgeons.

E. LUND, F.R.C.S. | T. JONES, F.R.C.S.
F. A. HEATH, M.R.C.S. | J. HARDIE, F.R.C.S.

Consulting Dental Surgeons.

H. CAMPION, M.R.C.S. | G. W. SMITH, M.R.C.S.

Dental Surgeons.

Monday Morning	I. RENSHAW, L.D.S.I.; D. HEADRIDGE, L.D.S. Eng.
Monday Evening	W. HEADRIDGE, L.D.S.I.; L. DRESCHFELD, L.D.S.I.
Tuesday Morning	T. TANNER, L.D.S. Eng.; G. O. WHITTAKER, L.D.S. Eng.
Wednesday Morning	P. A. LINNELL, W. MINSHALL, L.D.S.I.
Wednesday Evening	W. A. HOOTON, RLEY, L.D.S. Eng.

Thursday Morning ... W. Dougan, L.D.S.I.; E. P. Collett, L.D.S. Eng.
Friday Morning ... G. G. Campion, L.D.S. Eng.; W. Simms, L.D.S.I.
Friday Evening ... W. Dykes, L.D.S. Glas.; C. H. Smale, L.D.S., Eng.
Saturday Morning J. W. Dunkerley, L.D.S.I.; W. Smithard, L.D.S.I.

Administrators of Anæsthetics.

Wednesday Morning ... ... J. Prince Stallard, M.B.
Saturday Morning ... ... Alexander Wilson, F.R.C.S.

Demonstrator.

T. E. Sherratt, L.D.S.Eng.

House Dental Surgeon.

F. D. Tanner, L.D.S., Eng.

Preliminary Instruction.

During the first six months at the Hospital, new students are taken by the Demonstrator through a very complete course of practical instruction in all branches of operative dentistry. This course includes the actual preparation and filling of cavities out of, and in the mouth, the treatment of the different pathological conditions of the dental pulp, the treatment and filling of root canals, and the different methods of crowning.

A special course of demonstrations is given to more advanced students by the Lecturer on Operative Dentistry, and other demonstrations are given periodically by the dental staff.

Prizes.—The Fletcher prizes are awarded twice annually—in January and July. They consist of a first prize, value £8, for second year's men, and a second prize, value £2, for first year's men. The Matheson Operating Prize, value £3 3s. A prize, value £2 2s. is given by Messrs. Ash & Sons for the best essay on some subject in general surgery in connection with the teeth. This prize is awarded in July. Two prizes, value one guinea and two guineas are offered respectively to first and second year's men, for proficiency in the extraction of teeth. A prize, value 2 guineas, for the best Regulating Case treated during the year.

FEES.—The Fee for the 2 years' Dental Hospital Practice required by the College of Surgeons of England is £12 12s., which must be paid in advance.

A prospectus containing full information may be had on application to—

GEORGE G. CAMPION, Dean.

THE OWENS COLLEGE, MANCHESTER.

DENTAL DEPARTMENT.

PROFESSORS AND LECTURERS.

Anatomy, Descriptive and Practical— Professor Alfred H. Young, M.B., F.R.C.S.
Physiology—Brackenbury Professor Wm. Stirling, M.D., D.Sc.
Chemistry—Professor Harold B. Dixon, M.A., F.R.S.
Organic Chemistry—Professor W. H. Perkin, Ph. D., F.R.S.
Materia Medica and Therapeutics—Professor D. J. Leech, M.D., F.R.C.P.
Medicine—Professor J. Dreschfeld, M.D., F.R.C.P.
Surgery—Professor Thomas Jones, M.B., F.R.C.S.
Clinical Surgery—Professor Walter Whitehead, F.R.C.S.E., F.R.S.E.
Dental Surgery—Lecturer, G. G. Campion, L.D.S.
Operative Dentistry—Lecturer, G. O. Whittaker, L.D.S.
Dental Anatomy and Physiology—Lecturer, W. A. Hooton, L.D.S., L.R.C.P., M.R.C.S.

Dental Mechanics—Lecturer, THOMAS TANNER, L.D.S.
Dental Metallurgy—Lecturer, C. A. BURGHARDT, Ph. D.
Dental Pathology and Histology—Demonstrator, DAVID HEADRIDGE, L.D.S.

The Dental Department forms an integral part of the Department of Medicine, and with the Manchester Royal Infirmary and the Victoria Dental Hospital affords the fullest opportunities for study to students preparing for any of the Dental Examinations.

In addition to the ordinary Dental Lectures required by the Licensing Bodies, a course on Operative Dentistry is given during the Summer Session, and these are supplemented by a series of Practical Demonstrations given by the Lecturer at the Victoria Dental Hospital.

There is also a special Course of Demonstrations in Dental Histology and Pathology, in which Students are enabled to mount for themselves Microscopic Specimens illustrating these subjects.

PRIZES.—Prizes or Medals and Certificates are awarded in all the classes on the results of the several examinations.

Special Prizes are also awarded at the Victoria Dental Hospital.

The WINTER SESSION commences on October 2nd.

Prospectuses will be forwarded on application.

H. W. HOLDER, M.A., Registrar.

LIVERPOOL.

DENTAL HOSPITAL, MOUNT PLEASANT.

Consulting Physician—THOMAS ROBINSON GLYNN, M.D., M.R.C.P., Lond.

Consulting Surgeon—FRANK T. PAUL, F.R C.S., Eng.

Consulting Dental Surgeons.

C. ALDER, L.D.S.
H. C. QUINBY, L.D.S., D.D.S.
W. H. WAITE, L.D.S., D.D.S.

Honorary Dental Surgeons.

R. M. CAPON, L.D.S., Glasgow.
R. H. BATES, L.D S , Eng.
E. A. COUNCELL, L.D.S., Eng.
R. EDWARDS, M.R.C.S., L.D.S., Eng.
H. NEWTON HINDLEY, L.D.S., Eng.
W. MAPPLEBECK, L.D.S.I.
THOS. MANSELL, L.D.S., Edin.
J. N. P. NEWTON, L.D.S., Eng., D.D.S.
W. J. PIDGEON, L.D.S., Eng.
J. ROYSTON, L.D.S., Eng.
M. ALEXANDER, L.D.S.I.
T. COYSE, L.D.S , Eng.

Honorary Demonstrator of Operative Dental Surgery.
J. P. ROBERTS, L.D.S.

Honorary Anæsthetist.—J. G. GEMMELL, M.B., C.M.

Stipendiary Dental Surgeon.
LEWIS OSBORN, L.D.S., Eng.

Dean—R. EDWARDS, M.R.C.S., L.D.S., Eng.

This Hospital is a school of Practical Dental Surgery, duly recognised by the Royal College of Surgeons, and open to all Students of Dentistry, under such regulations as shall be determined by the Committee of Management.

The Hospital is open, daily, for the admission of patients from 9 till 11 a.m., and from 6. 30 to 8 p.m., except on Saturday.

Fees for Hospital Practice. £12 12s. for two years' Hospital Practice required for the curriculum. £15 15s. perpetual.

Further information may be obtained by applying to the Dean.

BIRMINGHAM.

MASON COLLEGE, (WITH QUEEN'S FACULTY OF MEDICINE.

Principal ... ... Professor R. S. HEATH, M.A., D.Sc.
Dean of the Queen's Faculty ... Professor WINDLE, M.A., M.D., D.Sc.

DENTAL DEPARTMENT.

Professors and Lecturers.

Anatomy—Professor BERTRAM C. A. WINDLE, M.A., M.D., D.Sc.
Physiology—Professor F. J. ALLEN, M.A., M.B.
Chemistry—Professor W. A. TILDEN, D.Sc., F.R.S.
Chemical Physics—Professor J. H. POYNTING, D.Sc., F.R.S.
Medicine { Professor C. W. SUCKLING, M.D., M.R.C.P.
Professor R. SAUNDBY, M.D., F.R.C.P.
Surgery { Professor BENNETT MAY, B.S., F.R.C.S.
Professor G. BARLING, B.S., F.R.C.S.
Materia Medica—JOHN BARCLAY, B.Sc.
Dental Surgery—F. HUXLEY, M.R.C.S., L.D.S.
Dental Anatomy—J. HUMPHREYS, L,D.S.I., F.L.S.
Dental Mechanics—W. T. ELLIOTT, L.D.S. Edin., & I., F.C.S
Dental Metallurgy { W. A. TILDEN, D.Sc., F.R.S.
THOMAS TURNER, Assoc. R.S.M.
Surgical Diseases of the Mouth—F. MARSH, F.R.C.S.
Medical Diseases of the Mouth—STACEY WILSON, M.B., M.R.C.P.

Demonstrators.

Operative Dental Surgery—W. T. MADIN, L.D.S.
Mechanical Dentistry—F. H. GOFFE, L.D.S.
Dental Pathology—C. D. MARSON, M.R.C.S., L.R.C.P., L.D.S.

Special Courses

Of Lectures for Dental Students will be delivered on—

i. Syphilis and Surgical Diseases of the Mouth in their relation to Dentistry, by Frank Marsh, F.R.C.S., Surgeon to the Queen's Hospital.

ii. Diseases of the Mouth and of Digestion in their relation to Dentistry, by T. Stacey Wilson, M.B., M.R.C.P., Physician to the General Hospital.

The Department, in conjunction with the Dental, the General, and the Queen's Hospitals, provides the entire course of instruction required for the Diplomas in Dental Surgery of the Royal College of Surgeons.

The College possesses a well equipped Dental Museum and Laboratory. An Entrance Scholarship, Medals, and Certificates in the classes are offered annually. There are special courses on Syphilis and Surgical Diseases of the Mouth, on Diseases of the Mouth and Stomach in relation to Dentistry, and on Practical Dental Microscopy. At the Dental Hospital, particular stress is laid upon the teaching of all latest methods of conservative Dentistry, including the various modes of Gold Filling, and Crown and Bridge work.

For prospectuses, and further information, application should be made to JOHN HUMPHREYS, Esq.. L.D.S., F.L.S. Hon. Sec., to the Department, 22, Newhall Street, or to

GEO. H. MORLEY, REGISTRAR.

BIRMINGHAM DENTAL HOSPITAL,

71, NEWHALL STREET.

OPEN DAILY AT NINE A.M.

Hon. Consulting Physician— ROBERT M. SIMON, M.D.

Hon. Consulting Surgeon—JOHN ST. S. WILDERS, M.R.C.S.

Hon. Consulting Dentists:

ADAMS PARKER, L.D.S.
CHARLES SIMS, L.D.S.

Hon. Administrators of Anæsthetics

S. W. HAYNES, M.B.,
J. HENRY BLAKENEY, M.R.C.S.
CHAS. ST. JOHNSTON, M.R.C.S., L.R.C.P.
FELIX VINRACE, M.D., F.R.C.S.
CYRIL HUTCHINSON, M.R.C.S.
T. SYDNEY SHORT, M.B.

Hon. Dental Surgeons:

H. BREWARD NEALE, L.D.S.
F. E. HUXLEY, M.R.C.S., L.D.S.
F. H. GOFFE, L.D.S.
J. HUMPHREYS, L.D.S.
F. W. RICHARDS, L.D.S.
A. E. DONAGAN, B.A., L.D.S.

Hon. Assistant Dental Surgeons:

W. R. ROBERTS, L.D.S.
F. R. HOWARD, L.D.S.
J. E. PARROTT, L.D.S.
W. T. MADIN, L.D.S.
J. MOUNTFORD, L.D.S.
P. T. NADEN, L.D.S.

House Surgeon:
SEP. FITTER, L.D.S.

Demonstrator.
J. E. PARROTT, L.D.S.

DEMONSTRATIONS.

Clinical Demonstrations will be given from time to time by the staff on cases of particular interest; also daily upon the preparing and filling of cavities, the insertion of porcelain inlays, pivoting teeth, adapting porcelain and metal crowns to broken down teeth.

Dresserships in the extraction room for all Students.

Dental Students are required to register their names for Hospital Practice with the Honorary Surgical Secretary, Mr. F. W. Richards, 27, Paradise Street, from whom further information may be obtained.

DEVON AND EXETER DENTAL HOSPITAL, EXETER.

Consulting Surgeons.
A. J. CUMMING, F.R.C.S., Eng.
JAMES BANKART, M.B., Lond., F.R.C.S., Eng.

Consulting Dental Surgeon.
S. BEVAN FOX, L.D.S., Eng.

Dental Surgeons.

J. T. BROWNE-MASON, L.D.S., Eng.
HENRY BIGING MASON, L.D.S., Eng.
T. G. T. GARLAND, L.D.S.I.
J. M. ACKLAND, M.R.C.S., L.D.S., Eng
S. N Eng.
J. A. MALLET, L.

Surgeon Administrators of Anæsthetists.

JOHN MORTIMER, M.B., Lond., M.R.C.S. Eng.	RUSSELL COOMBE, M.A., Cantab. F.R.C.S., Eng.

Honorary Secretary.

GEORGE A. TOWNSEND.

Attendance on the practice of this Hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental Diploma.

The Hospital is open daily (Sundays excepted), and patients are admitted between the hours of 9 and 11 a.m.

Pupils or any member of the Staff or other registered Practitioner (being a Life or Annual Governor) are permitted to attend the Practice of the Hospital, subject to the approval of the Medical Sub-Committee, on payment of Five Guineas annually to the Funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

Numbers of cases treated in 1892, 4,582.

PLYMOUTH DENTAL HOSPITAL

BANK STREET CHAMBERS, BANK STREET, PLYMOUTH.

The Dentists attend each day, at 9 a.m. except Sundays.

Certificates of attendance on the practice of this Dental Dispensary are recognized by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognizes the lectures delivered at the Dispensary.

Pupils of any of the Dental Surgeons of the Plymouth Dental Hospital, or other Dentists holding a Diploma of the College of Surgeons, or Members of the Odontological Society, may attend the Hospital on the day of such practitioner as may agree to accept such pupils on the payment of £1 1s. per annum to the institution.

A Course of Lectures will—if a sufficient number of Students present themselves—be delivered during the year.

On "Dental Physiology, Dental Anatomy, Dental Mechanics.'

Fee to Lectures, one Course, £7 7s.

Fee to Lectures, double Course, £12 12s (required for Diploma.)

Fee to Dental Practice at Hospital £5 5s. per annum.

Fee to entire Dental Curriculum (required for Diploma) 22 guineas.

E. A. BENNETT, Hon. Sec. and Treasurer.

EDINBURGH.

INCORPORATED EDINBURGH DENTAL HOSPITAL AND SCHOOLS.

Consulting Physician—ALEX. PEDDIE, M.D., F.R.C.P.E.
Consulting Surgeon—JOSEPH BELL, M.D., F.R.C.S.E.
Consulting Dental Surgeon—JOHN SMITH, M.D., F.R.C.S.E.
Dean—W. BOWMAN MACLEOD, L.D.S.

Dental Surgeons.

Andrew Wilson, L.D.S., Edin.
Malcolm Macgregor, L.D.S., Edin.
George Watson, L.D.S., Edin.
J. Stewart Durward, L.D.S., Ed.
James Mackintosh.
William Forrester.

Assistant Dental Surgeons.

John S. Amoore, L.D.S., Eng.
J. Graham Munro, L.D.S. Edin.
Fred Page, L.D.S.
John Turner, L.D.S., Edin.
David Munro, L.D.S., Edin.
Thomas Gregory, L.D.S.

Extra Assistant Dental Surgeons.

R. Nasmyth Hannah, L.D.S.
Sewill Simmons, L.D.S.

Chloroformists.

W. Lundie, M.B., C.M.
Matheson Cullen, M.B., C.M.,
J. M. Farquharson, M.B., C.M.

Tutorial Dental Surgeon.

Frederick Turnbull, L.D.S.

DENTAL SCHOOL.

Lectures.

Dental Anatomy and Physiology (Human and Comparative) by Andrew Wilson, L.D.S.—These Lectures will be delivered on the evenings of Tuesday and Friday, at 8 o'clock, commencing October, 1893. The Course consisting of twenty-four Lectures, will be illustrated by preparations, models, diagrams, microscopical specimens, etc.

Dental Surgery and Pathology, by George W. Watson, L.D.S.—These Lectures will be delivered on the mornings of Tuesday and Friday at 8 o'clock, during the Summer Session, commencing May, 1894. The course, consisting of twenty-four Lectures, will be illustrated by preparations, models, diagrams, microscopical preparations, etc.

Mechanical Dentistry, by W. Bowman Macleod, L.D.S. The Lectures will commence November, 1893, at 8 p.m., and be continued every Wednesday thereafter till the Course of at least twelve Lectures is concluded.

In connection with the above a course of Lectures on Metallurgy will be given by Forbes Watson, B.Sc., F.G.S.

Practical Mechanics.—Assistant Demonstrators, J. Stewart Durward L.D.S., J. Graham Munroe. L.D.S.—In addition to the Systematic Lectures, there will be given during the Session, Demonstrations on Dental Mechanics, and each Student will be expected to prepare the mouth, take the impression, make the denture, and insert the same in at least four cases. Special facilities are afforded in the Mechanical Department; a large and fully equipped workroom under the charge and direction of a competent mechanic, having been set aside for the construction of dental appliances. The Demonstrations will be spread over the two years of Hospital practice, and will be given as occasion serves. Students will be required to furnish their own hand tools.

Extra course of Lectures, Dental Materia Medica and Therapeutics, by Wm. Guy, F.R.C.S., L.R.C.P., L.D.S. Gold Fillings, H. Bycroft Ezard, L.D.S.

In the various classes prizes will be offered for competition.

General Fee for the Hospital Practice and special Lectures required by the Curriculum.—Hospital Practice, £15 15s. One Course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry, £9 15s—£25 10s.

Fees to separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s. each.

The Hospital Practice and Lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for the other Licensing Bodies. Second Courses of the Lectures as required by the Royal College of Surgeons of England, £2 4s.

For further information apply to the Dean, who will be found at the Hospital every Thursday morning between 9 and 10 o'clock.

THE SESSION 1893-4 OPENS OCTOBER 3rd, 1893.

General Fee for the Hospital Practice and special Lectures required by the Curriculum.

	£	s.	d.
Hospital Practice, Two Years........................	£15	15	0
One Course of 24 Lectures in Dental Anatomy ...	9	15	0
,, 22 ,, ,, Surgery ...			
,, 12 ,, ,, Mechanics ...			
Total........................	£25	10	0

For further particulars, apply to the Dean, 5, Lauriston Lane, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL,

4, CHATHAM PLACE, STIRLING ROAD.

The Hospital is open daily except Saturday and Sunday, from 5 p.m. till 7 p.m.

The work of the Hospital is conducted as far as possible, by the Students, under the supervision of the Dental Officer of the day. Cases of special interest will be made the subject of clinical instruction or demonstration as they occur.

The practice of the Hospital may be entered upon at any time during the Session and attendance dated therefrom. Fee for the two years practice required by the Curriculum, £15 15s. Fee for each course of Lectures, £3 3s.

DENTAL SCHOOL.

Dental Anatomy and Physiology, Human and Comparative, by W. WALLACE, M.A., M.B., L.D.S.

The Lectures will be delivered in the Summer Session, on the evenings of Tuesdays and Fridays, at 7 p.m., and will be illustrated by Diagrams, Preparations, and Microscopic Specimens. Text Book—Tomes, Manual of Dental Anatomy, Human and Comparative.

Dental Surgery and Pathology, by REES PRICE, L.D.S. Eng. M.R.C.S.

These Lectures are delivered on Tuesdays and Thursdays during the months of May and June, at 8 a.m., and will be illustrated by recent Specimens, and other Preparations and Drawings, &c. Text-books—Tomes, Manual of Dental Surgery; Salter's Dental Pathology and Surgery.

Mechanical Dentistry, by J. A. BIGGS, L.D.S.

This course will commence on the first Tuesday of November at 7 p.m., and will consist of 12 Lectures, with Practical Demonstrations in Dental Laboratory.

All communications on matters relating to the Dental School should be addressed to D. M. ALEXANDER, Solicitor, 117, Wellington Street, Glasgow, who will forward detailed Prospectus of the School.

SCHOOL OF MEDICINE, EDINBURGH.

The Fees required for students attending general subjects necessary for the curriculum of the Royal College of Surgeons, Edinburgh, are the same as those for the Conjoint Examining Board, as Candidates for the L.R.C.S.E. require to be in possession of a recognised Diploma in Medicine.

The Secretary of the School is Mr. R. N. RAMSEY, Royal Bank, 24, Forest Road, Edinburgh, from whom the official Calendar may be had.

DENTAL HOSPITAL OF IRELAND.

25, LINCOLN PLACE, DUBLIN.

The WINTER SESSION will commence on Monday, October 2nd, 1893.

The SUMMER SESSION will commence in May, 1894.

Consulting Physicians:

F. R. CRUISE, M.D. | JOHN W. MOORE, M.D.

Consulting Surgeons:

E. H. BENNETT, F.R.C.S.I. | SIR W. STOKES, F.R.C.S.I.

Consulting Dental Surgeons:

R. H. MOORE, F.R.C.S.I. | DANIEL CORBETT, M.R.C.S.E., L.D.S.

Dental Surgeons:

ROBERT HAZELTON, F.R.C.S.I.
W. BOOTH PEARSALL, F.R.C.S.I.
R. THEODORE STACK, M.D., F.R.C.S.I., D.M.D. (Harv.) L.D.S., Eng.

A. W. W. BAKER, M.D., F.R.C.S.I., L.D.S.I.
DANIEL CORBETT, Jr., A.B., F.R.C.S.I.
GEORGE WYCLIFFE YEATES, M.B., Ch. M., L.D.S.I.
G. M. P. MURRAY, F.R.C.S.I.

Assistant Dental Surgeons.

J. S. THOMSON, L.D.S., Ed. | SHENSTONE BISHOP, L.D.S.I.

Anæsthetists.

J. G. CRONYN, L.R.C.S.I., K.L.Q.C.P.I. | JOHN R. GRAVES, L.R.C.S.I., L.K.Q.C.P.I.
JAMES B. COLEMAN, M.B., Ch. M., R.U.I.

Pathologist—WILLIAM MALLET PURSER, M.D.

Registrar—WILLIAM A. SHEA.

In connection with the Dental Hospital of Ireland, the Dental School will be open for the Winter Session on October 2nd, 1893.

All Dental Students who have passed their Preliminary Examination are admissible to the Clinical Instruction of the Hospital, after paying Fees and subscribing to the conditions prescribed by the Staff.

In addition to Clinical Instruction, Courses of Lectures and Demonstrations will be given at the Hospital in Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, crowns, pivots, porcelain inlays, gold filling, regulating plates, &c., by W. Booth Pearsall, F.R.C.S.I.; R. Theodore Stack, M.D.; A. W. W. Baker, M.D.; Daniel Corbett, F.R.C.S.I.; G. W. Yeates, M.B., and G. M. P. Murray, F.R.C.S.I. And at the School of Physic which is within a few yards of the Hospital, special Lectures for Dental Students will be given in Dental Anatomy, and in Metallurgy by Professor Cunningham, and Professor Reynolds.

The Lectures on Dental Surgery and Mechanical Dentistry will be given during the winter, those in Dental Anatomy and Metallurgy during the summer months.

In addition to the longer courses of Hospital attendance, special courses of three months duration, will be given to Surgeons about to join the Army and Navy, or to practise in the Colonies or remote country districts.

Regulations as to Fees and other conditions can be obtained from the Registrar of the Hospital, or from

R. THEODORE STACK, Dean.

COOKE'S SCHOOL.

The School is recognised by the London University, the Apothecaries' Hall and other Examining Bodies, and offers somewhat special advantages to such as aim at combining the Dental and Medical Curricula with economy as to time and expense. Through the school being open for Anatomical work, not only during the winter months but also during the summer months, and the Curriculum of the Apothecaries Hall requiring, not "two winter and one summer Sessions," but "twelve months" of Anatomy and Physiology, the work in Anatomy and Physiology for the Apothecaries' Hall can be obtained at Cooke's School in *twelve calendar months* starting from any date, instead of the usual eighteen months starting from the 1st of October, or two years rting from the 1st of May. Clinical studies can be commenced as soon as the above mentioned Examination has been passed. The extra time for other work obtained through the above shortening of the course of instruction to the earlier subjects would admit of [illegible] the Dental and Medical Curricula being taken conjointly in something like [illegible] the time usually allotted to either. The License of the Apothecaries' Hall admits to the Examination for the L.D.S. of Edinburgh and Dublin. Passing the Examination in Anatomy and Physiology at the Apothecaries' Hall further admits the [illegible] in the direction of purely medical Examinations, to the Final Examination [illegible] for the Triple Qualification of Edinburgh and Glasgow, (Membership of the Royal Colleges of Physicians and Surgeons of Edinburgh), and License of the Faculty of Physicians and Surgeons of Glasgow. It is not intended to take on at [illegible] Cooke's School more than a limited number of men, *who must be steady and earnest workers.* For such, however, exceptional advantages are offered [illegible] in regard to thoroughly practical work in Anatomy and Physiology. For fur[illegible]ther information apply to Dr. Thomas Cooke F.R.C.S., 40, Brunswick Square, W.C.

IV. GENERAL HOSPITALS.

CHARING CROSS HOSPITAL.

Dental Surgeon—J. FAIRBANK, M.R.C.S., *Assistant Dental Surgeo*[illegible] COLYER, M.R.C.S, L.R.C.P., L.D.S., who attend at the Hos[illegible] days a week, at 9 a.m., for Dental Operations. A course of [illegible] Dental Surgery is also given during January, February, and Ma[illegible] FAIRBANK, and Tutorial classes three days each week throughout [illegible] Mr. COLYER.

Two prizes are awarded annually in the class of Lectures on Dental Surgery, of the value of six guineas and four guineas respectively.

Students may serve as assistants to the Dental Surgeon for a period of three months.

The composition fee for dental students is 54 guineas, or 60 guineas, payable in two instalments of 30 guineas each.

A proportionate reduction of the above fees will be made to those students who have completed part of the curriculum at a recognized institution.

The hours of lectures have been specially arranged to suit the convenience of dental students. Charing-cross Hospital is within three minutes walk of the Dental Hospital of London.

For further information apply to the Dean, Mr Stanley Boyd, or to the Librarian and Secretary, Mr. Francis Pink, at the office of the Medical School, Chandos Street, Charing-cross, between the hours of 10 and 4.

LONDON HOSPITAL AND MEDICAL COLLEGE.

Dental Surgeon—ASHLEY BARRETT, M.B., Lond. M.R.C.S., L.D.S.

The Council of the College of Surgeons recognize the Dental Department of the London Hospital as a school at which may be obtained the Dental Practice necessary to qualify a student for the Examination of the Dental Diploma. Dental Students may obtain the General Medical Education (that is, apart from certain special Lectures to be attended at a Dental School) and the Dental Practice necessary for the Diploma, at the London Hospital School, on payment of Forty Guineas.

A course of Lectures on the Anatomy and Pathology of the Teeth and Dental Surgery will be delivered by Mr. Ashley Barrett, on days which will be duly announced. It comprises the treatment of dental irregularities, of Dental Caries and such matters in connection with the subject as are of interest to the Medical Practitioner. Mr. Barrett gives practical instruction on Tuesdays at 9 a.m., which is open to all students of the School and can be attended by gentlemen who are not pupils on payment of a fee of Ten Guineas.

In addition to the Lectures a series of Demonstrations of the simpler modes of filling teeth will be given during the month of June. The Demonstrations will refer to the modes of Manipulating Amalgam and Gutta Percha fillings, the preparation of Cavities, the filling of Teeth containing vital and dead pulps, the mode of relieving pain after filling, and the instruments needed for these operations.

A Dental Assistant is elected every three months, without any additional expense. The terms of the office date from the first Tuesday in January, April July and October. In selecting Candidates, priority will be given to those who have attended the greatest number of Lectures on Dental Pathology and Surgery, and have also been the most punctual in attendance in the Dental Department on Tuesday morning.

Further information may be obtained on application to Mr. Munro Scott, he Warden, Medical College, London Hospital.

KING'S COLLEGE, STRAND, W.C.

pecial arrangements are made for Dental Students. Apply to the Dean.

MIDDLESEX HOSPITAL.

Consulting Dental Surgeons—SIR J. TOMES, F.R.S., F.R.C.S., L.D.S.
J. S TURNER, M.R.C.S., L.D.S.
Dental Surgeon—W. STORER BENNETT, F.R.C.S., L.R.C.P., L.D.S.
Assistant Dental Surgeon—W. HERN, M.R.C.S., L.D.S.

In 1887 the acquisition of a site in Cleveland Street enabled a much needed extension of the Buildings to be carried out. The additions included an additional Lecture Theatre, a physiological Laboratory and Class Room, a Students' Room, and a Luncheon Room. A new and commodious Library and a Materia Medica Museum have also been opened.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of Lectures—which are arranged to fit in with the work at the Dental Hospitals—and Hospital Practice on payment of a fee of 54 guineas, in one payment, or by instalments of £42 on entrance, and £21 at the beginning of the Second Winter Session.

A short course of Lectures on Dental Surgery will be delivered during November and December by the Lecturer on Dental Surgery, Mr. Storer Bennett. The Lectures will be supplemented by practical Demonstrations, which will be given every week during the Winter and Summer Sessions by the Dental Surgeon and Assistant Dental Surgeon. Students of the Hospital free, others pay a fee of 2 guineas.

Further information may be obtained from Sidney Coupland, M.D., the Dean, or from the Resident Medical Officer at the Hospital.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

Dental Surgeons—MR. PATERSON, MR. ACKERY.
Assistant Dental Surgeons—MR. READ, MR. ACKLAND.

The Dental Department of the Hospital is open on Tuesday and Friday mornings at 9 o'clock. The practice of the department is recognised by the Royal College of Surgeons.

The fee for general subjects for Dental Students for the first winter is £33 2s. 6d., for the first summer £33 2s. 6d., or a single payment of £66 3s.

ST. GEORGE'S HOSPITAL.

Dental Surgeon—H. L. ALBERT, M.R.C.S.

Mr. Albert attends at the Hospital on Mondays and Fridays at 1 p.m.; his assistant on Tuesdays and Saturdays, at 1 p.m.

A course of Lectures on Dental Surgery is given by Mr. Albert in t Summer Session. Free to Students of the hospital.

Fee for general subjects in Dental Surgery, exclusive of Practical Chemis £55. Payable in two instalments; first year, £30; second year, £25.

Further information can be obtained by application to Dr. ISAMBA OWEN, Dean of the Medical School.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

Dental Surgeon—MORTON SMALE, M.R.C.S., L.D.S.

Practical instruction in Dental Operations is given on Wednesdays and Saturdays at 9 a.m. Dressers are appointed who hold office for three months.

For prospectuses and further information apply to the School Secretary, Mr. FREDERIC H. MADDEN.

GEORGE P. FIELD, Dean of the School.

ST. THOMAS'S HOSPITAL.

Dental Surgeon—CHARLES EDWIN TRUMAN, M.A. Cantab, M.R.C.S., L.D.S.

Assistant Dental Surgeon—Vacant.

Gentlemen may receive instruction in diseases of the teeth, are appointed dressers, and can undertake operations, subject to the supervision of the Dental Surgeons, Tuesdays and Fridays at 10 a.m.

Numerous cases of irregularity of the teeth, and the application of artificial appliances, are undertaken during the term.

The fee for attendance on the *general* subjects required of the students in Dental Surgery, is, for the two years, £65, or by instalments, £55 for the first year, and £15 for the second year.

UNIVERSITY COLLEGE HOSPITAL.

Dental Surgeon—SIDNEY SPOKES, M.R.C.S., L.D.S.

Mr. Spokes attends at the Hospital on Tuesdays and Fridays, at 9.30 a.m. At University College a material reduction in the fees is made for students who are entered at a recognised Dental Hospital. For those who do not require Chemistry and Materia Medica, there is a Composition Fee of 50 guineas.

WESTMINSTER HOSPITAL.

Dental Surgeons—J. WALKER, M.D., M.R.C.S., L.D.S.
LLOYD WILLIAMS, M.R.C.S., L.D.S.

Dental Department.

The Dental Surgeons, Dr. Walker and Mr. Lloyd Williams, attend at 9.15 a.m. on Wednesdays and Saturdays respectively.

Dr. Walker attends at 9 15 a.m. on Wednesdays, and Saturdays for practical demonstration of diseases and operations of the teeth.

The fee for attendance on the Dental Practice is £2 2s. for three months, and £3 3s., for six months. The whole of the General Lectures and Surgical Practice required for the Dental Diploma of the College of Surgeons can be attended for 50 guineas in one sum on entrance, or for two sums of £30, and £26 payable at the beginning of each year.

Dr. Walker will deliver a course of Lectures on Dental Surgery and Pathology at an hour to be determined at the commencement of the Session.

A Scholarship value £20 is offered annually in September for Competition to commencing Dental Students.

HARVARD UNIVERSITY DENTAL DEPARTMENT, BOSTON, MASS., U.S.A.

The Sessions of this School begin the last Thursday in September, and end the last Wednesday in June, making nine months of practically continuous work in each year.

General Anatomy, with Dissections, Physiology, and General Chemistry, are the studies of the first year. Of the second year they are Operative and Mechanical Dentistry, Materia Medica and Therapeutics, Oral Anatomy and Physiology, Bacteriology, and Surgical Pathology. Of the third year Operative and Mechanical Dentistry, Crown and Bridge work, and Orthodontia. The Student can also attend gratuitously all the *lectures* in any other department in the University.

The Infirmary furnishes abundant facilities, averaging 8,000 operations, of which a large proportion consists of filling teeth, every year.

The University degree D.M.D. (Dentariæ Medicinæ Doctor) is conferred on all who fulfil the requirements.

For the first year a student is a member of the school the fee is 200 dols.; for the second year, 150 dols., and for any subsequent year, 50 dols.

For further information and announcements, address, Thomas H. Chandler, Dean, 161, Newbury Street, Back Bay, Boston, Mass., U.S.A.

THE DENTAL COLLEGE OF THE UNIVERSITY OF MICHIGAN.

The Annual Session of this Institution will commence on the 1st of October, and close on the last Thursday of June, thus making a course of nine months. A preliminary examination, having reference to general education attainments, is required.

The Student in this department will receive instructions in Anatomy, Physiology, Pathology, Chemistry, Materia Medica, Therapeutics, Surgery, and Hygiene, from the professors of their respective branches in the *Departments of Medicine and Surgery* of the University, when lectures commence and continue the same as with the Dental College.

Special instructions will be given in Dental Pathology, Oral Surgery, Dental Therapeutics, and diseases of Women and Children, with reference to the teeth.

FEES AND EXPENSES.

The fees, which must be paid in advance, are as follows:

RESIDENTS OF MICHIGAN.—Matriculation, 10.00 dols. Annual dues, 25.00 dols.

NON-RESIDENTS.—Matriculation, 25.00 dols. Annual dues, 35.00 dols.

For the various Laboratories, 35.00 dols.

GRADUATION FEE.—For all alike, 10.00 dols. The matriculation fee is paid but once, and entitles the student to the privilege of permanent membership in any department of the University. The Annual due is paid the first year and every year thereafter while at the University.

V. SCIENTIFIC ASSOCIATIONS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN, 40, LEICESTER SQUARE, W.C.

OFFICERS FOR 1893.

President—W. BOWMAN MACLEOD.

Vice-Presidents:

RESIDENT.	NON-RESIDENT.
T. H. G. HARDING.	R. T. STACK, (Dublin).
R. H. WOODHOUSE.	F. H. BALKWILL (Plymouth).
MORTON SMALE.	W. E. HARDING (Shrewsbury).

Treasurer—S. J. HUTCHINSON.

Librarian—ASHLEY GIBBINGS. *Curator*—STORER BENNETT.

Editor of the Transactions—E. LLOYD WILLIAMS.

Honorary Secretaries.

W. A. MAGGS (Council), C. ROBBINS (Society),
J. F. COLYER (For Foreign Correspondence).

Councillors.

RESIDENT.	NON-RESIDENT.
E. J. BENNETT.	T. S. CARTER (Leeds).
E. G. BETTS.	W. S. WOODBURN (Glasgow).
B. J. BONNELL.	W. H. WILLIAMSON (Aberdeen).
J. ACKERY.	H. C. QUINBY (Liverpool).
A. UNDERWOOD.	D. W. AMOORE (St. Leonards).
HARRY ROSE.	WILSON HOGUE (Bournemouth).
C. D. DAVIS.	G. G. CAMPION (Manchester).
C. E. TRUMAN.	J. MCKNO ACKLAND (Exeter).
W. R. HUMBY.	J. H. MCCALL (Leicester).

EXTRACT FROM THE BYE-LAWS.

Objects and Constitution of the Society.

The Society is instituted for the encouragement and diffusion of knowledge in Dental Surgery. and for the promotion of intercourse among Members of the Dental Profession.

The Society shall consist of Resident, Non-Resident, Corresponding, and Honorary Members.*

1. The Resident Members shall consist of gentlemen residing or practising wholly or partly in London or within ten miles of the General Post Office, St. Martin's-le-Grand.
2. The Non-Resident Members shall consist of gentlemen wholly practising beyond ten miles from the General Post Office.
3. The Corresponding Members shall consist of distinguished gentlemen residing in the Colonies of Great Britain or in Foreign Countries.

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* Candidates for the Resident, Non-Resident, or Corresponding Membership of the Society shall not be eligible unless they practice as Dental Surgeons, or are interested in the progress of Dental Surgery, and are also Licentiates in Dental Surgery. or qualified Practitioners of Medicine or Surgery: or possess such a Diploma or Degree as in the opinion of the Council, will qualify them for the Membership of the Society.

4. The Honorary Members shall consist of distinguished Practitioners of Dental Surgery who have retired from practice, of distinguished Medical Practitioners, and of gentlemen distinguished in any department of Science.

Persons who advertise in the public journals, or by circular, either their profession or their professional attainments or public appointments, or anything relating to their mode of practice or charges, or who expose for public inspection specimens of operative or mechanical Dentistry, or conduct their practice in any way which in the opinion of the Council of this Society, is derogatory to the respectability of the Profession, shall not be considered eligible for nomination as members.

No person being the proprietor of a secret remedy, or holding a patent relating to the requirements of Dental Practice, shall be a member of this Society.

Election and Admission of Resident aud Non-Resident Members.

Candidates for Resident Membership shall be recommended by four or more Members, two at least signing from personal knowledge. Candidates for Non-Resident Membership shall be recommended by three members, one at least signing from personal knowledge.

All recommendations for resident or non-resident members shall be submitted to, and approved of, by the Council, before being proposed to the Society for ballot.

Contributions of Members.

Every person elected a Resident Member shall pay Three Guineas as an Admission Fee and an Annual Subscription of Two Guineas, *in advance.*

Every person elected a Non-Resident Member shall pay Two Guineas as an Admission Fee and an Annual Subscription of One Guinea in advance.

The Entrance Fees and First Annual Subscriptions shall be paid on admission, and the subsequent Annual Subscriptions in the month of November in each year; but new members proposed at or after the Annual Meeting, shall not be required to pay any Subscription for the current Session.

Ordinary Meetings.

The Ordinary Meetings of the Society shall be held on the first Monday in each month, from November to June, both inclusive, at 8 p.m. precisely, except in the month of January, or when an Act of Parliament holiday occurs on that day, the meeting shall be held on the Monday next ensuing.

Each Member may introduce two Visitors at these Meetings on writing the Visitors' names in a book to be kept for that purpose. The same Visitors will not be admitted more than three times during one Session.

Annual General Meeting.

The Annual General Meeting of the Society for the election of the Officers and Councillors, &c, shall be held on the evening of the second Monday in January every year.

Society's Transactions.

The Transactions of the Society, under the designation of "Transactions of the Odontological Society of Great Britain," shall be printed at such times and in such manner as the Council shall direct.

The "Transactions" shall be presented to all Resident and Non-Resident members of the Society who have paid their Annual Subscriptions.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND,

5, LAURISTON LANE, EDINBURGH.

President—Mr. WALTER CAMPBELL, L.D.S.

Vice-Presidents.

Mr. J. STEWART DURWARD, L.D.S.	Mr. A. A. DELESART, L.D.S.

Treasurer—Mr. JOHN S. AMOORE, L.D.S.

Secretary—Mr. HERBERT B. IZARD. L.D.S., 32, Buccleuch Place., Edinburgh.

Curator and Librarian —J. GRAHAM MUNRO, L.D.S.

ANDREW WILSON, L.D.S.	W. BOWMAN MACLEOD, L.D.S.
G. W. WATSON, L.D.S.	P. S. WALKER.

Ordinary Meetings.—The Society meets on the second Thursdays of November, December, January, February and March.

EXTRACTS FROM THE CONSTITUTION AND LAWS.

Name and Objects.

The Society shall be named the "Odonto-Chirurgical Society," and shall have for its objects the Promotion and Diffusion of Knowledge in matters connected with Dental Surgery; the furtherance of communications on such subjects by members of the Society; and otherwise to advance the interests of Dental Surgery as a branch of Medicine.

Ordinary and Honorary Members.

The Society shall consist of Ordinary, Honorary, and Corresponding Members.

(*A*.) Ordinary Members. Gentlemen shall be eligible for Ordinary Membership who hold the Licentiate in Dental Surgery of any of the Licensing Bodies of Great Britain or Ireland, or a Colonial or Foreign qualification recognised by the General Medical Council, entitling them to practise dentistry in Great Britain.

(*B*.) Honorary Members. Gentlemen (practising or retired) who hold a qualification recognised by the General Medical Council, or Foreign or Colonial Dentists holding a qualification recognised in their own country, who may have distinguished themselves in the practise of, or in connection with Dentistry, and Medical or Scientific men who may have distinguished themselves in connection with Dentistry, shall be eligible as Honorary Members.

(*C*.) Corresponding Members. Gentlemen resident in the Colonies or Foreign Countries, holding qualifications recognised in their respective countries shall be eligib'e as Corresponding Members.

The Ordinary Members shall have vested in them the Government of the Society, and all cases not otherwise specified shall be decided by them by a majority of votes by ballot if required.

Obligations of Members.

No member shall be permitted to advertise his profession, his modes of practice, or his charges, either in the public journals or by circular. They shall not be permitted to expose specimens of their work for public inspection, nor to carry on their practice in connection with any other business, nor to hold any patent relating to Dental practice, nor to conduct themselves in any way which the Society may consider derogatory to the Profession, so long as they continue members of the Society. But members who practise in towns other than that in which they reside, shall be allowed to intimate their visits, such intimations being subject to the approval of the Council.

Applications for Membership.

Candidates for admission as Members of the Society shall be recommended by an Ordinary Member, and the recommendation seconded by another. After being approved by the Council, such recommendation shall be read to the Society at an Ordinary Meeting, and shall lie over to the next, when the Candidate shall be balloted for, when two-thirds of the Members present must be in his favour to secure his election.

Contributions.

Ordinary Members residing within a ten-mile radius of the City shall pay an Entrance Fee of One Guinea, and One Guinea of an Annual Subscription in advance. All other Ordinary Members shall pay an Entrance Fee of One Guinea, and Ten Shillings and Sixpence of an Annual Subscription. All Annual Subscriptions to date from the 1st March preceding the Candidate's admission.

THE BRITISH DENTAL ASSOCIATION,

(*Incorporated June* 3rd, 1880,)

40, LEICESTER SQUARE, LONDON.

President—W. H. BREWARD NEALE, L.D.S.I.

Vice-Presidents.

SIR EDWIN SAUNDERS, F.R.C S.	SIR JOHN TOMES, F.R.S., F.R.C.S.
Dr. JOHN SMITH, F.R.C.S., Edin.	L.D.S., Eng.

Treasurer—W. H. WOODRUFF, L.D.S., Eng.

Honorary Secretary—W. B. PATERSON, F.R.C.S., L.D.S., Eng.

Extracts from Memorandum of Association and Bye-laws.

The objects for which the Association is established are the promotion of Dental and the allied Sciences, and the maintenance of the honour and the interests of the Dental Profession by

"The Periodical meetings of the Members of the Association and the Dental profession generally, in different parts of the country.

"The publication of a periodical journal, and by

" The maintenance of the spirit and provisions of the Dentists' Act, by such lawful means as may be necessary, &c., &c."

Extracts from the Bye-laws.

A person who is registered in the Dentists' Register shall be eligible for election as a member of the Association, provided that he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a showcase exposed to public inspection; or by means of public advertisements or circulars, describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any registered practitioner not disqualified by any Bye-law who shall be recommended as eligible by any three Members of the Association (the recommendation of one being from personal knowledge), and who has signed the appended form of application for admission and agreement as to terms of Membership, may be elected a Member by the Representative Board or by the Council of a recognized Branch.

The subscription is one guinea per annum, and each member is entitled to a copy of the Journal of the Association monthly, and to attend the Annual Meetings of the Association.

THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

EXTRACT FROM BYE-LAWS.

1. Composed of Members of the British Dental Association who reside in the Midland and North Western Counties of England, and of Associates who can fulfil the conditions laid down in the Bye-laws. The Annual Meeting takes place in May.

2. The Association shall consist of Members and Associates. No one shall be eligible for membership who is not already a member of the British Dental Association. Any registered Practitioner of good character, who does not conduct his practice by means of the exhibition of Dental Specimens, appliances or apparatus in an open shop, or in a window, or in a show case exposed to public inspection; or by means of public advertisements or circulars describing modes of practice; or patented or secret processes; or by the publication of his professional charges, may be admitted as an Associate. Associates shall be entitled to all the privileges of the Branch Association, but shall not be entitled to vote or hold office therein.

3. Any member of the British Dental Association may be elected a Member of the Branch by the Council of the Branch, at any of their ordinary Meetings, on his sending a written application for election to the Secretary of the Branch.

4. Any registered Practitioner who can subscribe to the conditions laid down in Bye-law 2, and who shall be recommended as eligible by any three members or Associates, may be elected an Associate by the Council, on his forwarding the recommendation and his subscription to the Honorary Secretary of the Branch.

Honorary Secretary, I. RENSHAW, 87, Drake Street, Rochdale.

METROPOLITAN BRANCH OF THE BRITISH DENTAL ASSOCIATION.

Composed principally of members of the British Dental Association practising within the London postal district. The Branch meets three or four times a year, and the Annual Meeting is held in January.

The qualifications of Membership are similar to those in the other Branches.

Honorary Secretary, SIDNEY SPOKES, 59, Queen Anne Street, Cavendish Square, W.

BRITISH DENTAL ASSOCIATION, WESTERN BRANCH.

A person who is registered in the Dentists' Register shall be eligible for election as a Member of the Branch, provided he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show case exposed to public inspection; or by means of public advertisements; or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any dental practitioner, being a member of the British Dental Association, who can subscribe to the conditions laid down in Bye-law 4, and has been recommended as eligible by any three members of the Branch may be elected a member of the Branch by the Council.

NOTE.—If the applicant be not previously a member of the British Dental Association, the Council has power to elect to the Association.

Hon. Sec., **Thomas Arthur Gourd**, 6, West Southenhay, Exeter.

BRITISH DENTAL ASSOCIATION.
EASTERN COUNTIES BRANCH.

Districts.

Norfolk, Suffolk, Cambridgeshire, Essex, Lincolnshire, Northamptonshire, Bedfordshire, Hertfordshire, and Bucks.

Bye Law.

Any Registered Dental Practitioner, who shall be recommended as eligible by any three members of the Branch, (one being from personal knowledge,) may be elected a member by the Council. The election to be by ballot; three black balls to exclude.

Honorary Secretary, W. A. **Rhodes**, 53, Trumpington Street, Cambridge.

BRITISH DENTAL ASSOCIATION.
SOUTHERN COUNTIES BRANCH.

A person who is registered in the Dentists' Register shall be eligible for election as a Member of this Branch, provided he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show case exposed to public inspection; or by means of public advertisements: or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any dental practitioner who can subscribe to the conditions laid down in Bye-law 4, who has been recommended as eligible by any of the members of this Branch, may be elected a Member by the Council, and shall be admitted a Member of the British Dental Association.

Hon. Secretary.—**Walter Harrison**, 6, Brunswick Place, Hove, Brighton.

BRITISH DENTAL ASSOCIATION,
SCOTTISH BRANCH.

A person who is registered in the Dentists' Register shall be eligible for election as a Member of this Branch, provided he be of good character: that he does not conduct his practice by means of the exhibition of dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show case exposed to public inspection; or by means of public inspection: or by means of public advertisements; or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any dental practitioner who can subscribe to the conditions laid down in Bye-law 4, who has been recommended as eligible by any of those members of this Branch, may be elected a member by the Council, and shall be admitted a member of the British Dental Association.

Hon. Sec., J. **Graham Munro**, 16, George Square, Edinburgh.

BRITISH DENTAL ASSOCIATION,
WEST OF SCOTLAND BRANCH.

Any person, being a member of the British Dental Association, and whose name is upon the Dentists' Register, shall be eligible for election as a member of this Branch, provided he be of good character; that he does not conduct his practice by means of the exhibition of dental specimens, appliances, or apparatus in an open shop or in a window, or in a show case exposed to public inspection, or by means of public advertisements, or circulars describing modes of practice, or patented, or secret processes; or by the publication of his scale of professional charges.

Hon. Secretary,—**William Wallace**, 36, Dundas Street, Glasgow.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE, W.C.

The object of the Society is the consideration of matters specially appertaining to Dentistry. The affairs of the Society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, Curator, and nine other members. The President is chosen from the past Students who have obtained their degree of L.D.S.; the Vice-Presidents from past Students with or without qualification.

The entrance fee for ordinary members is half-a-crown, and there is an annual Subscription of the same amount.

Ordinary meetings are held at 8 p.m. on the second Monday in every month, from October to March inclusive. The annual meetings for the election of officers and other business is held on the third Monday of January in each year.

Every member has the power of introducing one visitor, not being a Student of the Hospital or School, to the meetings, with the consent of the President. Visitors are invited to take part in the discussion of the papers and clinical cases.

There is a Library and a Museum in connection with the Society, both being under the superindence of the Curator.

The Council offer a prize, value £3 3s., at the end of each year, for the best paper read before the Society during that year.

STUDENTS' SOCIETY OF THE NATIONAL DENTAL HOSPITAL AND COLLEGE,

GREAT PORTLAND STREET, W.

This Society, which was established March 16, 1878, was constituted for the encouragement and diffusion of knowledge in Dental Science, and for the promotion of intercourse among its Members: and all Students of Dental Science are eligible for Membership. All candidates for Membership must be approved by the Council before being proposed to the Society for election. The Entrance Fee is 2s. 6d., and the Annual Subscription, 2s. 6d., to be paid in advance. The Ordinary Meetings of the Society are held on the first Friday in each month, from October to June, both inclusive, except October, May, and January, when they are held on the second Friday. The meetings commence at 8 p.m. precisely. Each member may introduce two visitors, not being Students of the Hospital or College, but the same visitors may not be admitted more than three times during one Session.

THE STUDENTS' SOCIETY OF THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

The object of the Society is the consideration of matters generally and specially appertaining to Dental Science, and for the promotion of intercourse amongst its members.

The affairs of the society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, Curator and Librarian, Editor of Transactions, and not more than four Students of the Hospital.

The General Meeting is held on the last Tuesday in every month from October to March inclusive and the Annual Meeting is held in May of each year.

Every member has the power of introducing two Visitors not being Students of the Hospital to a General meeting with the consent of the President.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LIVERPOOL.

This Society is constituted for the consideration of matters generally and specially appertaining to Dental Surgery.

Candidates for membership must be approved by the Council before being proposed to the Society for election. Such proposals are posted during one meeting of the Society, and remain so posted until the next monthly meeting when the candidate is ballotted for. No candidate is elected unless he have the votes of two-thirds of the members present. Eight to form a quorum.

Every member has the power of introducing two visitors, not being Students of the Hospital or School, to the evening meeting, with the consent of the President.

An ordinary meeting is held on the third Friday in every month, from October to March inclusive; the chair is taken at eight o'clock p.m. The annual meeting for the election of officers and other business will be held in January, next year, on the third Friday to receive the Treasurer's and Secretary's next report.

British Journal of Dental Science.

No. 617. LONDON, OCT. 2, 1893. Vol. XXXVI.

DENTISTRY IN DISTRICT SCHOOLS.

By Sidney Spokes, M.R.C.S., L.D.S.

It is unnecessary to say one word to the readers of the Journal as to the importance of proper attention to the teeth of children. Outside of dental circles, however, it is a matter which has been much overlooked with as, we think, serious consequences. Of late there have been certain indications that the subject has received some attention; and it is to be hoped that parents and guardians may to some extent realize their responsibilities and, if from no other reason, recognize from the extreme prevalency of caries in adult life, the necessity which exists for prompt treatment of tooth diseases in the young. Most of us are of opinion that preventive dentistry must begin in the nursery, and that the nurse's supervision should be succeeded by periodical visits for inspection by a dentist.

Although the profession has for some time been aware that a lamentable amount of untreated caries has existed in the mouths of young persons, it is only quite recently that we have been put into possession of some reliable statistics which have crystalized our suspicions into certainty. Within the last few years a collective investigation has been carried out by certain dentists as to the actual dental conditions existing in the mouths of large numbers of school children, and the results show that only 14 per cent. were in such a sufficiently healthy state as to require no treatment.

Over 10,000 mouths of Boys and Girls, of an average age of twelve years, have now been examined in English and Scotch Schools; and in order to make the figures valuable, a certain course of recording was followed so as to render the particulars uniform. Whilst many other interesting facts and details were obtained from a careful tabulation of case-books, the main feature, the one of greatest importance, was the distribution of caries of the teeth. Several of the authorities who gave permission for the schools under their control to be examined, wished for information; when this was supplied it was in some cases followed by an attempt to deal with the circumstances found to exist, and in several instances the appointment of a dental surgeon has been made.

As an extension of such preliminary work, and as in some sense a natural sequel to the investigation before alluded to, it seems to me that some account of the work done in a large metropolitan District School may prove not uninteresting to those readers of the JOURNAL who take an interest in such matters, although I believe that better reports may be forthcoming from other similar schools.

The School in question has a fluctuating population of between 700 and 800 children. It is situated in a healthy suburb and the whole surroundings, and the interior arrangements, are such as to ensure, as far as possible, a healthy development both in mind and body for that portion of the rising generation thus brought under the control of our poor-law system. A resident medical officer of high professional attainments and wide experience has had charge of the medical department for some years, and it is a point of peculiar interest, that in his anxiety to see that nothing was left undone for the welfare of the children, he had come to the conclusion, and recommended to the Board of Management, that special dental treatment of a conservative nature was requisite. This was before the days of our collective investigation, and is in itself a noteworthy reply to a criticism which is sometimes passed when the appointment of a dental surgeon to such institutions is first mooted.

It is sometimes suggested that the medical officer is competent to deal with whatever dental troubles may need attention, and that this officer may resent the presence of another to help him in his work. I have heard of one instance where the medical officer does not consider the co-operation of a dentist advisable. It is reported that he examines the mouths of all children on their arrival, and any teeth which in his opinion are too carious are forthwith removed. If no treatment other than that of extraction is to be regarded as necessary, then objections to wholesale extractions by medical officers will fall to the ground. But *pari passu* with the revelations made as to the widespread existence of decay, there is, fortunately, an increasing willingness to accept the beneficial results to be obtained from modern modes of treatment. The only real justification for the appointment of a dental officer would appear to rest upon the fact that extraction is not by any means the only remedy, and that however skilful a medical officer may become in the use of the forceps, there are other procedures which are now considered by the best authorities as imperative from a humanitarian, as well as from a professional point of view.

It is probable, therefore, that such appointments will increase in numbers, and that in the case of appointments existing previously to the new era just commencing, the holders of such posts must not remain content with recording, in the report books, a list of the numbers of teeth extracted

They must be able to show that some attempt has been made at conservative treatment, and although at first the authorities may appear chary of dispensing public money with too lavish a hand, yet there is no reason to fear that when results become apparent, the dentist will not be remunerated on equal terms with other professional officers. As one who has watched the development of the new departure with the closest attention, I have found that the financial point is one that invariably comes up in discussion upon the question of conservative treatment, as opposed to mere routine extractions. It is, of course,a question which must ultimately be disposed of, but in my opinion the present is not the most fitting moment to thrash the matter out. The one urgent point to be insisted upon, is that conservative treatment should be a distinct element in the duties of such a post, and that a record should be kept of all the work done. One outcome from the extension of such appointments will probably be the formation of an Association of School Dentists, the members of which, by occasionally meeting together, would benefit by a comparison of experiences, and would by a combination of mutual interests be able to influence, in an authoritative manner, the further stages in the gradual elevation of such appointments into public recognition. An informal conference on this subject has already taken place.

In order to render valuable the records of the work done in connection with such appointments, it would appear advisable that as far as possible a uniform system should be adopted, in some such analogous way as that found so useful in the collective investigations before alluded to.

In the school in which I am especially interested, we have case-books of 500 pages. Each child's name and age appear at the top of a page; immediately below is a chart of the outlines of the teeth of the temporary and permanent dentitions, each tooth being indicated by a number. The rest of the page is ruled for notes, and there is a margin for the date. On inspection, the caries is indicated on the tooth diagrams with ordinary pencil; an extraction is represented by a cross with a red pencil over the particular tooth diagram, whilst a filling inserted is shown by a marking in blue. In this way each page demonstrates graphically, and without much clerical trouble, the actual condition of a child's mouth from a carious point of view, and also the treatment adopted. In the notes, the tooth is referred to by a number, and any other facts of importance or interest can be jotted down.

I have taken two such books (one for boys, the other for girls), and have extracted from them the following details as representing a year's work, which has been done under my own supervision. A weekly visit was paid to the School; the time occupied may be taken approximately as five hours, any difference being in favour of the School. A separate room with a good north light is set apart for the work, a Morrison chair, dental engine, and other accessories being provided. From the case-books a list of children required to be in attendance is prepared and previously forwarded, and all new comers are seen at the first visit after their arrival at the School.

The figures I here present refer to 750 children, in round numbers, 430 boys and 320 girls, varying in age from infants of four years to children of 13, 14, and 15 leaving the School for the army, navy, domestic service, or other avocations. As far as possible each child presents for inspection twice a year, and we found that in the period under review 1153 examinations of the mouth were recorded. The number of temporary teeth which it was found necessary to remove was 640; the boys accounted for over 400, sixteen of the teeth being abcessed; and the girls are credited with 234 of which five are noted as being abscessed. There are also notes to be found referring, as might be expected, to cases where necrosed roots of temporary teeth had ulcerated into the cheek. The extraction of permanent teeth, I think, has been kept as low as possible, but it is a question whether some of the permanent teeth, left in the hope of trying some other treatment, would not have been better removed, for in some cases when the child's name was entered on the list for attendance, we discovered that he or she had left the school. Practically only absolutely hopeless teeth have as yet been extracted, and in some instances where there did not appear much chance of infection for neighbouring teeth; where the mouth was not foul, and where the tooth was quiet and affording some possible surface for mastication, it was thought best to err on the side of leniency. Under some such system as this, and allowing of course for regulating cases, we find 42 permanent teeth were extracted for boys, for which six are noted as being abscessed; and 39 in the case of girls, of which six were also abscessed, and one had a polypus. With the exception of a few bicuspids and one lateral removed for regulation purposes, these extracted permanent teeth were first permanent molars distributed as follows:—

	Boys	Girls	Total.
Left Upper	6	5	11
Right Upper	10	8	18
Left Lower	11	10	21
Right Lower	8	14	22
	35	37	72

With regard to fillings, the registers show that more than 300 were inserted in cavities in permanent teeth, and that nine temporary molars were also stopped. In the face of the large numbers of teeth requiring attention it was thought well to take some of the more urgent cases, and also some which could be filled with least expenditure of time. Some kind of selection seemed imperative. Many molars with crown cavities where the margins could be quickly reduced by chisels, and easily admitting excavators to prepare the interior, were treated with copper amalgam. Sullivan's amalgam, indeed, was used wherever practicable, with as much of the mercury expressed as possible. The resulting mass was burnished in, piecemeal, and care was taken to fill the cavity, even leaving a slight excess. In some instances pieces of silver foil, and in other cases the powdered remains of waste Gregory's amalgam, were burnished in on the surface of the filling, and apparently with good results. Buccal cavities in all stages of development demanded attention, particularly amongst the girls, and here the amalgam seems especially suitable. No attempt was made at root treatment, but an occasional ~~effort~~ was made at pulp-capping. In a few cases glycerine* was applied under a concave metal disc, and a temporary filling afterwards replaced by a permanennt one. Some appear successful, others failed. In a few cases also, compound fillings of cement with amalgam on the top were practised, and in some others phosphate cement and gutta-percha, were respectively employed.

From the table on the next page it will be seen that the lower molars claimed the most attention.

We found twenty-four instances in which the upper central incisors were fractured to a greater or less extent. They may be tabulated thus:—

	Boys	Girls	Total.
Left incisor	6	3	9
Right incisor	10	5	15

There are many more points of interest which might be mentioned, but in order not to make this communication too

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* I am aware that arsenic is the impurity most difficult to get rid of in the preparation of Glycerine; but an absolutely pure form can now, I believe, be obtained from Price's, and seems to have certain characteristics worthy of trial in pulp-capping.

Table showing the distribution of, and materials used for, 321 *Stoppings in Children's Teeth.*

	Amalgam	Cement and Amalgam	Phosphate Cement.	J acobs G. P.	Gilbert's G. P.	Gold.	Totals.
Left Upper Central	..	..	3	..	..	..	3
Right do. do.	..	..	2	..	..	1	3
Left do. Lateral	..	..	3	..	..	..	3
Right do. do.	..	..	1	..	..	..	1
Left do. 1st Bicuspid	1	1	2	..	..	..	4
Right do. do. do.	1	..	2	..	1	..	4
Left do. 2nd do.	2	..	1	..	..	..	3
Right do. do. do.	1	..	2	..	1	..	4
Left do. 1st Molar	38	1	9	..	6	..	54
Right do. do. do.	27	2	8	1	5	..	43
Left do. 2nd do.	3	..	..	..	..	..	3
Right do. do do.	3	..	..	..	..	..	3
Left Lower 1st Bicuspid	..	..	1	..	..	..	1
Right do. do. do.	..	..	1	..	..	..	1
Left do. 2nd do.	2	..	..	..	1	..	3
Right do. do. do.	2	..	..	..	..	..	2
Left do. 1st Molar	64	2	7	..	4	..	77
Right do. do. do.	67	1	6	1	2	..	77
Left do. 2nd do.	15	..	..	1	..	..	16
Right do. do. do.	15	..	..	..	1	..	16

lengthy, a few brief notes taken from the girls' book must suffice.

18, aged 15 years ; upper laterals, right upper first bicuspid, and all four second bicuspids apparently not developed.

91, aged 7 years ; right upper second bicuspid erupted.

99, aged 10 years ; left lower second molar erupting ; six months later, right upper and lower second molars erupting.

114, aged 14 years. All four first molars gone ; right lower second molar filled.

163, left upper central had been extracted two years before during an examination, on account of pain.

167, left and right lower molars each with a well-marked additional cusp rising in front of buccal furrow.

218, aged 11 years ; Right lower first molar presents the only masticating surface in the mandible, pulp almost exposed, Caulk's cement flowed over ; six months later large buccal amalgam.

222, Left lower first molar : exposure of pulp. Glycerine under metal cap, G.P. six months later, fistulous opening in front.

235, aged 13 years ; left upper lateral inside arch ; central and canine almost close together. All other teeth sound ; extract lateral, and grind tip off canine.

254, aged 11 years ; left upper first molar with polypus, extract ; left lower molar abscessed, extract. Anterior root much curved backwards ; two posterior roots.

258, right upper lateral is a small peg ; no sign of the left one.

This offhand selection does not perhaps show anything remarkable, but is intended to illustrate some of the varieties of practice noted in the case-books.

In the course of inspecting large batches of children' mouths we soon found our attention directed to recurri instances in which a distinct fold or frænum, of mucous m brane passed from the bicuspid region outwards to the cheek. When the child is told to close the teeth, and a finger, placed in the angle of the mouth, draws the cheek away, these mucous folds are in some cases very marked and the space behind is strongly suggestive of a buccal pouch in the molar region. Whether these folds may be regarded as in some sense vestigial remains of a normal, more marked, condition in our byegone ancestors of a remote age, remains of course open for discussion, but Mr. Bland Sutton tells me that although the cheek-pouches of monkeys have not as yet received sufficient attention, the folds I have mentioned are in the "right place." They are better marked in the lower than in the upper jaw.

In drawing these remarks to a conclusion I may mention that the children, with few exceptions, make excellent patients. One boy I saw go fast asleep whilst having a molar stopped. Cases of this, however, are not unknown in private practice. One of the girls, on the other hand, could not restrain her mirth, and on being asked repeatedly not to laugh, said it "tickled her so." Many of the extractions of permanent teeth were made whilst the patient was anæsthetised with nitrous oxide gas. Much work still remains to be done, both for permanent teeth and in the direction of filling temporary molars. We found the girls already in possession of tooth brushes, and in accordance with a suggestion in the annual report the boys are also to be provided with them.

Although the operations of filling absorb proportionately by far the most time, they are in my opinion of the greatest value, and it is in this direction that most good will result.

A CASE OF CUTANEOUS FISTULA OF DENTAL ORIGIN.

By M. Heide.

(Translated from *Revue Internationale D'Odontologie*).

Whilst away in the country, in September, 1892, I was consulted about a child, some eight years of age, who had suffered for eight months from toothache followed by discharge and suppurating adenitis in the submaxillary region. In a general way the child had good health, he and his brothers and sisters were under good sanitary conditions, and the parents were strong country people. All hereditary or diathesic influences must also be eliminated. This little patient had been attended by the doctors of the neighbouring villages who extracted milk teeth, and then after several fruitless attempts to treat the adenitis, gave up the case saying, according to the parents, that he suffered from *humeurs froides*, and that time would cure him. In Beauce *medicastres* have not yet entirely disappeared, and they had recourse to a "marcou," (the seventh son of a like family), who, according to the accepted superstition of the country, can cure sick people by placing the hand upon the affected part. The "marcou" was not more successful than the learned doctors, and the trouble grew worse in time.

On a first examination on September 19th, I made out a considerable swelling with induration of the right cheek, the skin in the submaxillary region was much stretched and smooth, generally red, but purple in places. Fluctuation and external appearances showed distinctly the presence of a collection of pus, escaping with difficulty by two fistulæ, one in front hard, with fungating margins, the other, two centimeters behind, with regular edges. A thick crust covered the two openings. Inside the mouth one found in the centre of the thickened tissues a movable sequestrum lying in the gingivo-labial sulcus; the edges of the buccal wound were clean. The first molar was present as well as the first bicuspid, they were not carious, but both were very loose; the temporary teeth had been removed at the commencement of the illness. Not having been present at the onset of the symptoms, I had only vague indications as to their origin. However, summing up the bad state of the temporary teeth and their extraction by the doctor who had treated the child before me, as well as the subsequent discharge, made one seriously consider that this case of necrosis had a dental origin.

Treatment.—Whatever was the origin, the line of treatment was clear. This consisted in dividing the gum to reach the piece of necrosed bone: the sequestrum was seized with tweezers, and lifted out easily enough.

The bleeding which followed the operation was at first tolerably free, but it did not need any hæmostatic. The hole left by the operation was large enough to put a finger-tip into. The wound having been cleansed, I injected some of the following solution:—

Creosote ...	5	grammes.
Iodide of Potassium	1	gramme.
Tincture of Iodine	25	grammes.
Alcohol ...	25	grammes.
Water ...	500	grammes.

A dressing of iodoform was used. Externally, I washed the fistulæ and the cheek with carbolised water. If I had had the necessary instruments, curettes, &c., I should have preferred to open the fistulæ to scrape away the mortified parts. I could have at once removed the fungoid growths at the orifice, and the cure would have been more rapid. I was obliged to be content with a dry iodoform dressing.

September 20.—The child came back at 9 a.m.; he had passed a good night; there was no fever. The intra-buccal dressing was removed, and I then found there was healthy suppuration with slightly thick pus of a fresh yellow colour. I washed the parts with carbolised water and removed the external dressing. The injection came out through the two fistulæ; the dressings were re-applied and repeated four times a day.

September 21.—The day I left the country I used the same treatment and found the internal wound in a better condition, the margins were cleaner and not so red, externally the skin was not so congested, and the parts were not so distended. Everything seemed comfortable, and I advised that the child should be brought to me in a week.

October 1.—During the ten days interval the internal wound has much improved, whilst the suppuration continues through the fistulæ. The swelling of the cheek has slightly diminished. On a fresh examination the teeth were not found to be firmer, and fearing that they kept up the inflammation I advised their extraction. With a probe I explored, through the fistulæ, the external and internal surface of the angle of the jaw; the bone was bare. We decided to interfere more radically, extracting the teeth and scraping away the necrosed bone. For this operation anæsthesia was necessary. Next day our distinguished friend and teacher, Dr. Aubeau, gave chloroform, and then, with a bistoury divided the tissues between the fistulæ, and by the use of a sharp curette removed the fungating surfaces. A tampon placed in the wound checked the oozing of blood, and then a dressing of iodoform gauze was applied.

October 3.—An injection, with an irrigator, was made in the mouth, and much of it escaped externally. The same treatment was followed the next day.

October 12.—A week passed before I saw the child again. The swelling of the cheek had diminished, and marked modification was apparent to the touch, the induration decreased. In the external wound there was an increase of granulations. We touched the fistulous tract throughout its length with nitrate of silver, repeating the application three times a week. As we did not dare to leave the solid stick in the hands of the father, we prescribed a solution of five grammes of crystalized nitrate of silver to thirty grammes of distilled water, to be used with a piece of stick wrapped round with wadding. The interior of the mouth presented a good appearance. I examined the patient on November 2nd in the hope of finding him cured. It was not quite so. The fluid no longer passed, and the cicatrisation in the mouth was complete. Externally the granulations persisted, neither greater nor less, although the wound had been touched with the nitrate of silver solution every two days. I recommended another journey to Paris, which was agreed to, but in spite of this the visit was deferred. About November 10th, a second sequestrum made a spontaneous appearance behind the submaxillary region, and at some distance from the fistulous tracts. It consisted, indeed, of the angle of the jaw. Cicatrisation followed rapidly.

In April, 1893, five months after the discharge of the last sequestrum, I saw my little patient. The mouth and the cheek showed no trace of disorder, with the exception of the absence of two teeth. The general health was excellent.

Some interesting remarks arise from this case. It is probable that the milk molars caused diffuse suppuration and an osteitis which produced as a consequence the arrest of development of the roots of the second bicuspid and the first permanent molar. The milk teeth disappeared and the necrosis extended and was aggravated by the badly formed teeth which rapidly died.

The medical attendants did not see that the teeth secondarily affected presented signs of mortification, that the sequestra should have been removed and that a cure was in this direction.

We removed one sequestrum, the second was expelled spontaneously, because, we believe, the centre was favourably modified by removing the secondary cause, by the extraction of the dead teeth, by the cleansing of the soft parts and of the necrosed portion of the maxilla. The patient had been treated without success for eight months, he had been given up by ascribing the symptoms to scrofula (*humeur froides*), that is to say, to tuberculosis, and it was left for us, a dentist, to enquire into the true nature of the disorder and to be fortunate enough to make it disappear.

THE USE OF A MATRIX.

There is but a very small amount of disadvantage in the use of the matrix for gold fillings : whereas, there is a great advantage to be derived from its use, if it is a well-adjusted, well-made, and carefully placed matrix. Concerning its use with plastics, I think there is everything to be said in its favour and nothing against its use, from the fact that plastics especially amalgam, to be inserted well should be inserted with a reasonable amount of pressure, which pressure cannot be brought to bear upon ordinary fillings in cavities, except in the crown cavities, without the aid of a matrix. I do not believe an amalgam filling can be inserted by pressure in a proximal cavity running into the crown surface, unless you use the matrix ; for as you press against the outside you press out against the crown side, and as you press upon the crown side you press out the proximal.

Dr. Hungerford.

British Journal of Dental Science.

LONDON, OCTOBER 2nd, 1893.

THE STUDY OF ANATOMY.

Although dentistry is now something more than a handicraft, it seems only yesterday that it was able to lay claim to any scientific pretensions, and the present is not the time to stand still. The operative side has developed more than the mechanical, possibly because the latter had approached a high state of perfection, whilst the former was dependent upon methods more or less empiric. It was, however, to be expected that the responsibilities involved in dealing with pathological conditions of the mouth, would sooner or later demand an extended acquaintance with anatomy and physiology, in order that the operator might be better fitted for the more accurate and confident treatment of the diseases associated with the teeth and neighbouring parts.

Perhaps no one of the subjects which the young student approaches at the commencement of his hospital career has the same peculiar fascination as the study of Anatomy. He may already, if he has been wise, have devoted some of his spare time to Osteology, and is looking forward to clothe the skeleton he is acquainted with, by the paradoxical method of pulling the body to pieces. The surroundings amongst which this practical part of his knowledge is to be acquired, the preconceived ideas as to work in the dissecting room, the gruesome possession of a "part" of the body of a fellow creature, all tend to set in vibration certain emotional chords which no other branch of preliminary medical work affects. The wonders revealed by Physiology supplement the interest aroused by a study of Morphology; but the former branch of Science does not necessitate precisely the same kind of tension, and the pathway to its comprehension offers milder methods of travel. Be this comparison just or not, it is one of the essentials of successful student life that innate sensitiveness must give way to the hard practical demands of the curriculum, leading the learner to place before himself the attainment of certain facts which the experience of others has shown will be useful to him hereafter. Much discussion has been raised at times as to the utility a knowledge of anatomy, and other medical subjects, affords to the dental surgeon; but if he is not to share the ignorance of the "bone-setter" school it is well for the public that his eyes should be opened. The old tale of the free-lance who had achieved a kind of reputation for lithotomy illustrates the position. Such an one finally thought he would proceed on scientific lines, and accordingly commenced a study of the anatomy of the perineal region. When the possible dangers of the operation became revealed to him by dissection, he felt himself unable to continue his practice, and wisely left the patients in the hands of competent surgeons. The licensing Bodies of England, Edinburgh, and Glasgow require twelve months' dissection and attendance on one course of lectures; and that the necessary knowledge can be thus gained by the average student we have no doubt. There is some belief that the majority of dental students who fail at examination do so in the general subjects, and if this occurs through deficient preparation, it suggests that some more careful supervision of the dental students in the medical schools is requisite. On the other hand, examiners have been known to speak very highly as to the anatomical attainments of some of the candidates, and to declare that their knowledge equalled that of men coming up for medical examinations. Without going into the question more fully, we will suppose it is conceded that a knowledge of the anatomy of the head and neck (excluding the brain) is essential to the well-trained dental surgeon. It remains then to say a few words as to the methods by which this is best obtained.

This time last year we reviewed "*Dissection Guides*," by Mr. Thomas Cooke, a teacher who is well-known, not only for the school he has founded, but also for the views he holds as to the way in which anatomy should be learned. We have lately received a pamphlet by the same author which, together with the other work, helps to form a suggested solution of the difficulty which now presents in regard to this fundamental branch of medical education. It is a plea in favour of practical or "dissectional" anatomy as opposed to "Inferential and Interpretational." This latter "scientific anatomy" according to the author, is taught, and can only be taught, by plates and diagrams. He states that our text-books are getting filled up with statements, mainly from German authors, which are probably correct, but which are of such a nature that the dissector cannot verify them for himself. As the teaching follows the text-books, anatomy is becoming based on mere book descriptions. In addition, it seems that the subject is much crowded out by Physiology, and rejected candidates are no longer required to practise further dissections. Mr. Cooke urges that it is the wearisome repetition, which is the necessary accompaniment of abstract teaching, that tends to destroy the real interest in Anatomy. He recommends that the "part," as far as possible, should be maintained as a whole, and speaks very highly of Gray's Anatomy. We cannot help thinking this sounds reasonable. In short, the best way of learning, and of remembering, anatomy is to dissect honestly, at the same time educating the eye and the finger. Plates and diagrams should be merely adjuvants.

OLD PHRENOLOGY AND THE NEW.—Those who still believe in external measurements of the skull as being useful for diagnosing special mental attributes, will find food for reflection in a communication made at the British Association meeting. Dr. Clapham, in the Anthropological Section, gave a few of the results of his examination of the heads of some four thousand insane persons. On an average the heads of these were larger than those of sane persons, though the weight of brain matter was less. The localization of function as mapped out by the experimental work of Ferrier, Horsley, Schäfer, and others, appears likely to upset the older "bump" phrenology; and Dr. Clapham's remarks show how difficult it is to arrive at any definite results from an examination of the surface of the skull.

THE FRENCH VISIT TO ENGLISH DENTAL SCHOOLS.—M. Touchard, who in company with the lamented Dr. Thomas, came over to inspect the methods of teaching in England, has made his official report. It is generally considered an advantage to see ourselves as others see us, and M. Touchard appears to have made a good use of his opportunities. We may refer later to this interesting report, but for the moment mention two points. We gather that the visitors were surprised to find so much routine work carried on by the students, as a matter of hospital business, rather than as affording opportunity for formal demonstration. The extent to which anæsthesia by nitrous oxide is made use of was, however, a point in our favour, and the combination with oxygen as practised by Dr. Hewitt finds especial mention.

"BLACK TONGUE."—This condition consists of hypertrophy of the piliform epithelium, and is associated with the presence of a parasite. Whether the latter is to be considered in any way as a cause of the hypertrophy is a question which has been recently studied by Dr. Massin. He attempted to cultivate germs, but without success, and inoculations on animals also gave negative results. Other facts favoured the view that the condition depended rather upon some trophic alteration than upon the presence of a micro-organism.

THE BRITISH ASSOCIATION.—The Physiological world may be congratulated upon the excellent address on Biology given by Dr. Burdon Sanderson, as the President of the Association. It should do much to bring the importance of the subject before the eyes of the members of other Sections, and the public; and the fact that the General Committee has sanctioned the formation of a separate Section for Physiology at future meetings, may perhaps be taken as some indication that the address has already borne good fruit. Although Dr. Sanderson was afraid that the majority of the members did not share his opinions, he called upon them to unite in insisting that the claims of science to public support should be recognised. "The wealthiest country in the world which has profitted more—vastly more than any other, England stands alone in the discredit of refusing the necessary expenditure for its development, and cares not that other nations should reap the harvest for which her sons have laboured."

TIC DOULOUREUX.—Dr. Jarre, in a paper read before the Académie de Médecine at Paris, expressed the opinion that a large majority of cases of this painful affection were due to a cicatricial condition of the nerve terminations in the alveolar region, caused by chronic alveolo-dental inflammation, or as a result of badly developed wisdom teeth. He recommends that a portion of the alveolar process, and the enclosed nerve termination should be removed. Ten cases are reported in which all other treatment had been tried; this operation produced a total cessation of the symptoms.

New Books.—We have just received from the publishers a copy of the new work on Dentistry which we have been expecting for some little time. Messrs. Morton Smale and J. F. Colyer in their respective functions of Examiner and teacher, may be accepted as welcome authors on such subjects as "Diseases and Injuries of the Teeth." They have produced a book which many students will doubtless commence the new session with. Such a work deserves perusal from cover to cover, and we must defer a more lengthy criticism until a future occasion. A glance at the pages shows a profusion of illustrations, and the chapter on the treatment of caries is, we think, destined to become popular.—Another book to hand is on Anæsthetics, by Dr. Frederic Hewitt, which we think will enhance the reputation of one already well known in his special line of practice. We hope to take an early opportunity of giving our readers a full review.

Incisors and Compound Teeth.—In the Section of Anatomy and Physiology at the last meeting of the British Medical Association, Professor Cleland illustrated, by means of specimens, the gradual passage from the simplest form of tooth, which was founded on a simple papilla, to the most complex forms in which several papillæ, and the cusps founded on them, were collected on a common base. He pointed out how pits were formed by a range of elevations surrounding spaces between. He then proceeded to indicate that the slight depression on the lingual aspect of the crown of a human incisor represented the pit in the incisor of the horse, and exhibited additional incisors from the human subject in which this pit was completed.

Reviews.

Letters from a Mother to a Mother, on the Formation, Growth and Care of Children's Teeth. By "Mrs. M. W. J." Fourth edition. The Wilmington Dental Manufacturing Co., Philadelphia.

This little book, written by the wife of a dentist, contains a good deal of information conveyed in the form of sixteen letters to a young mother ; and we cannot help thinking that if mothers generally were able to master the contents much good would result. With much of the practical part we agree, and the fact that it is a correspondence between women may perhaps permit of a kind of poetic license being allowed to cover some of the more theoretical statements. The authoress, for example, unequivocably adopts the suggestion that if the mother's blood be deficient in nutriment for the child, "your own bones and teeth may be drawn on to supply the deficiency." No doubt it would be impossible to discuss disputed points in such a treatise, so we have to accept many statements with merely a mental reservation, and to hope that the mother may not suffer. The use of lime water is strongly urged throughout the book. It is said to be very beneficial during lactation, in hardening the mother's teeth rendered soft and sensitive from deficient mineral elements. Some eight or nine manufacturing firms get a good notice for foods and other preparations, but it may be remarked that, after all, their names and addresses will save the young mother much trouble. The authoress is able to quote from her own experiences. One of her children was reduced to such a point of inanitition through the use of corn starch gruel that its life was despaired of. Cure was effected, however, by the persistent use of bran baths and bran poultices, phosphatic food being thus supplied to the child by absorption through the pores of the skin. Believing that vaccination affects the formation of the teeth injuriously, the authoress would have us delay this operation until after the enamel of the last permanent tooth is completed.

Another point, the boldness of which will charm the histologist, is met with in the letter describing what the teeth are. Not only is the theory of a nerve supply to the dentine accepted, but vessels and absorbents are also postulated. "From the pulp, through the dentine, to the internal surface of the enamel, ramify the most sensitive nerve fibrils, and minute capillary vessels, laden with the life-giving elements which build up the tissues. The nutrient elements are thus distributed to every portion of the tooth structure, effete or worn-out particles being taken up by absorbents and disposed of through the general circulation, as in every other portion of the body."

This does not exhaust the list of passages to which criticism might take exception, but we recognise the importance of other information which the young mother would do well to accept. Indeed, the one to whom these letters were addressed seems to have appreciated their value, and at the same time offered the authoress an opportunity of proffering some sort of apology for mixing theory with practice. "Under the stimulus of your appreciative replies, and your repeated requests for still further information, it (the correspondence) has grown into almost a *scientific dissertation* far beyond its original design."

Indigestion, Corpulency, Gout. By Thomas Dutton, M.D.
Third Edition. London: Henry Kimpton, 1893.

In the Introduction the author condemns quackery, and considers the profession are to blame in the matter because they do not let the lay public know sufficient of the *modus operandi* of medicine to enable them to judge for themselves why certain things are prescribed. The author is of opinion that there have not been enough popular medical treatises enlightening them on medical subjects, and he has done his best to remedy this state of things by publishing this and several analogous volumes. At the same time he appears to be aware that he will be accused of advertising himself. We must confess that some of the plentiful supply of foot-notes might possibly warrant such an interpretation. Although the author states that he is totally adverse to the medical profession advertising themselves in any way, he is in favour of educating the public up to the times, by means of medical works free from technicalities, and thinks that such books should be advertised in such papers as are read by the people.

Whilst we may be able to agree as to the utility of the public being instructed in physiology, and thereby knowing something of normal function, the justification for teaching pathology is not so clear ; an acquaintance with the rules of health and how to avoid preventible disease is a very different thing from an attempt to understand, and perhaps diagnose, such conditions as occur in the varieties of, say, indigestion, or gout. For this reason we prefer that part of the present work which deals with physiology and foods. When the reader happens to be one of the dyspeptic sufferers, described in other parts, we do not think there will be much solid satisfaction derived from contemplation of such possibilities as *stricture*, or *cancer of œsophagus*, *gastric ulcer*, *cancer*, or *stricture of pylorus* presented with all the emphasis of italics. Rather would we advise him to cease reading, and consult Dr. Dutton personally, or at all events fill up the series of questions, a system which the author has found works so admirably that he is able to treat patients at a distance.

By far the best aspect of the book from our point of view is to be found in the views held, and the directions given, with regard to the importance of attention to the teeth.

Abstracts of British & Foreign Journals.

THE TREATMENT OF NECROTIC CONDITIONS IN THE ORAL CAVITY.

By Rodrigues Ottolengui, M.D.S.

(*Concluded from page* 800.)

Prof. G. V. Black sent the following to Dr. Ottolengui:—

"In the letter received from you to-day, you relate two cases of necrosis of portions of the bones of the maxillæ which seem to have resulted from alveolar abscess, and you ask my opinion as to whether or not the offending teeth should be extracted in the stage of inflammatory movement and fever which usually accompany these cases. In answering your questions I cannot now go much into detail, but will give my opinion in brief. The danger of extensive necrosis in these cases principally depends upon two factors. First, the violence and duration of the inflammatory movement, and of the rise of temperature accompanying it. Second, the physical condition of the patient. The character of the infection is probably important, but we have not as yet sufficiently accurate knowledge of this variation in the different cases upon which to base a definite opinion. The inflammation is due to infection from the root canal, either not filled, imperfectly filled, or from secondary infection through the blood, in an old and imperfectly healed abscess. In any case, either the root canal or the tissues immediately surrounding the apex of the root contains the active or exciting cause of the trouble. Therefore, theoretically, the immediate removal of the tooth, and with it the exciting cause of the difficulty, so far as may be, is demanded in all cases in which the conditions seem to threaten serious injury to surrounding parts. I should say that the greater the inflammation and the higher the temperature, the more urgent the demand for immediate extraction. I speak now of the stage of active inflammatory movement, not of the stage of suppuration following it. My own practical experience in these cases most strongly supports the theoretical deductions. Within my observation, cases of serious necrosis following extractions during the most severe inflammatory movement have been exceedingly rare, as compared with those occurring where extraction has been delayed. Relief following extraction, and the apparent prevention of the further spread of the inflammatory movement, has been so general that I have no hesitation in saying that this rule should usually be followed. Now, as to the second point, the condition of the patient. In most cases of extensive necrosis from alveolar abscess or other cause, there is evidently a constitutional taint, which may be temporary, and on account of some infection of the general system, which under favourable conditions would soon pass away, but which favours the progress of suppuration. This condition, or better, those conditions, for I do not suppose it to be always the same, are not very directly under the control of the physician, and judgment as to their influence can not be definitely made in advance. We often see in these conditions metastatic abscesses occurring, and necrosis taking place in different parts of the body, without apparent local cause. If such a condition be recognised, or strongly suspected, certainly it would be wrong practice to allow an active inflammation to progress from a known point of infection so easily removed as the root of a tooth. The danger of infection after extraction is hardly to be considered. Of course infection of a grave character might occur after extraction. I have seen several such, but when we consider the number of extractions that occur, certainly the number of serious infections following are not sufficient to deter one from extracting a tooth in a case of special necessity. When extraction has been unavoidably delayed until suppuration is in full progress, and pus is discharging, the demand for immediate extraction is not so urgent, and in many cases may well be delayed. Yet, even in this case, extraction would be the general rule, though it cannot be expected that it will prevent an injury that is already accomplished. As to a progressive necrosis, of which you speak in one of the cases you recite, this always has a systemic cause back of it. Even though the original cause may have been strictly local, there has been more or less general blood poisoning, or general infection, before we have progressive necrosis."

In the above, Prof. Black distinctly tells us that he speaks of the inflammatory stage only, and not of the suppurative stage which follows. The whole tenour of his letter is in favour of extraction. In the American System of Dentistry, however, on page 950, volume 1, I find that he says: "If this lesion is discovered early in the case, the parts should be well cared for until by natural process of absorption the necrosed portions are loosened; they should then be carefully removed. I have learned by clinical experience, that much of an alveolar process may be destroyed by necrosis from inflammation, without necessarily destroying the hope of saving the tooth. Many of those cases that present a very bad appearance, heal with surprising facility, with a little care." He then describes a case from practice in which the buccal plate of the alveolus and septum between two or three teeth were lost by necrosis, the teeth being retained only by wiring, they had become so loosened, and yet Prof. Black succeeded in saving the teeth and restoring the process about them. The antagonism between these two opinions from one authority is more apparent than actual, as I must explain, rather than be thought to raise a quibble in order to lessen the value of the advice given in Prof. Black's letter. His direction for extracting is, as he says, during the acute inflammatory movement, whereas the teeth which he saved came to him during the suppurating stage. Yet in face of the possibilities of salvation which he himself points out in the secondary stage of the disease, might we not hesitate to follow the advice of extracting during the primary stage?

Prof. David W. Cheever writes:

"(*a*) Incise—leeches—salines—release pus—wait.

(*b*) Remove all teeth which were loosened by necrosis; operate on the necrosis *after* the sequestrum has loosened. Always incise the soft parts, cleanse and irrigate from the first."

Prof. Carl Heitzman writes as follows:

"In reply to your questions, I would say that whenever necrosis of the alveolar process threatens, all that the dentist is allowed to do is to extract the broken root, which as a rule is the primary cause of the suppurative periostitis preceding necrosis. All the teeth involved in the process of periostitis should be left in place, until falling out at the slightest exertion of mastication. That the teeth should be extracted when the periostitis is progressive, in order to check the spreading of the inflammation, is an altogether mistaken idea. Some twelve years ago I had an attack of suppurative periostitis, resulting in necrosis of the left side of the lower jaw. The trouble was caused by a broken root of the first left inferior bicuspid. The inflammation was intense, the fever high. In fact it was the worst ailment I ever experienced in my life. The broken root was extracted, with the result that the second bicuspid became loose and fell out. A few weeks afterwards a necrotic piece, almost half an inch in length and a quarter of an inch in breadth, was loosened and removed with my fingers. The first molar, a large healthy tooth, had lost the socket of the anterior root, but the posterior remained unchanged, and is ever since fastened in its socket, keeping the tooth useful. This fact plainly shows that the too hasty extraction of teeth during suppurative periostitis is not a legitimate procedure. In this assertion I am supported by Prof. Rose, of Tübingen, Germany, who after an extensive experience in necrosis of the jaws, claims that we should abstain from the extraction of teeth, even in the worst cases, since after elimination of the necrotic bone, the teeth, even though much loosened, may become impacted in newly formed bone tissue, and remain serviceable for a lifetime."

Prof. Roswell Park, of the University of Buffalo, answers thus:

(*a*) I have never regarded high temperature, local inflammation, or even gangrene, as anything but existing and urgent reasons for getting rid of whatever necrotic material may be present, either as active or concomitent cause; and I believe this general principle to be as valuable in dental work as elsewhere in the body. Dead tissue of any kind means septic organisms in overwhelming numbers, and removal of the same means riddance of exciting causes of inflammation, and toxic infection. The *first* indication is, then, to remove such material as thoroughly as possible up to a limit where tissues, appear so healthy as to be capable of resistance to further encroachment. Here is where the greatest judgment is called for, in properly estimating these appearances.

(*b*) I think the above covers the answer to your second query. I would remove all necrotic tissue, whatever it were, and however widely it might extend, and I would then reinforce this measure by such active cauterization of the parts as to make some active bactericidal agent (bromine. or Zn Cl. e. g.) penetrate and saturate the surrounding tissues, and incidentally sear and close the mouths or outlets of the absorbents.

I think no such operations on the mouth, as your paper mentions, should be done without abundant use of antiseptic agents for some days thereafter."

This ends my list of replies on hand.

I believe that the publication of the above letters presenting divergent views adjacent to each other, will be of value. It will attract attention to the fact that we have much yet to learn before we can know. And the fact is most emphatically here shown, that of necrosis we know deplorably little. Prof. Truman gives us a most valuable expression of opinion. Yet though he says that extraction cannot be looked upon to limit the disease, and though he admits that surgical interference has been baneful, or at least ineffectual, and though he cites two extreme cases of progressive necrosis, in the history of each of which there is a report of extraction during primary periostitis, nevertheless he sums up by advising extraction.

It seems to my mind that extraction in the presence of progressive periosteal inflammation, where suppuration threatens as a certain sequence, is a purely empirical practice. It is a doing of something when we know not just what to do. Our literature is full of just such cases as that of Dr. Thomas, the two cited by Dr. Truman, and Dr. Heitzman's personal experience, and yet the historians usually fail to see any connection between the extraction and the subsequent extensive necrosis, as a simple matter of cause and effect. My own knowledge on the subject was first acquired from the teachings of Dr. Atkinson. I will relate a case which will be instructive. A number of years ago, I attended a meeting of the New Jersey State Society at Asbury Park. I was down for a clinic, and a lady boarding in the house was brought to me as a patient. Examination showed that there was a suppurative periostitis present about the central, lateral, and cuspid, on the right side above. Her temperature was high; in fact, she had risen from bed to attend my clinic, hoping to get the relief which she failed to procure from the local practitioner. I sent her back to her room, and called Dr. Atkinson to accompany me in consultation. We decided that necrosis was already present. She asked Dr. Atkinson if it would not be the quickest way just to have the teeth extracted. "Madam," he replied, "that will be the quickest way to lose your jawbone, and perhaps your life." She entrusted her case to me, and I accompanied her from Asbury Park back to New York. Arrived at her home, she requested a consultation with her physician, and an appointment was made for the following morning. To my disgust, I found this physician to be a homœopath, and a fossil. He declared that he could cure the disease without my assistance, and I retired from the case. Two days later, as I subsequently learned, three loose teeth were extracted, and two months later the greater portion of the superior maxilla was removed by operation, having been destroyed by progressive necrosis. It is a matter of wonder to the layman why men of prominence can always be found who go upon the witness stand as expert witnesses, and under oath testify to diametrically opposite medical facts. The explanation of this is simple. There are very few, if any, facts in medicine. Theories predominate, and these theories are dependent upon the varied experience of the men holding and teaching them. In the matter of necrosis, let us suppose that a perfectly good operator and scientific, conscientious gentleman, should follow the practice of immediate extraction, and should do so for, say ten years without a mishap. Would he not be entitled to swear that extraction was the proper course of treatment? Obviously he would. But suppose that on the day after, he extracts teeth under similar circumstances, and the patient grows rapidly worse, losing a large part of the jaw. Suppose that in his next case similar treatment resulted in death, as once occurred in Chicago would that gentleman testify in favour of immediate extraction the next time that he was called? I think not. Thus it is, then. Those who have not seen evil results give us the negative testimony that extraction is a safe treatment, though oddly enough they do not explain what good accrues from it. Those who oppose extraction give us positive evidence based upon experience.

The Dental Practitioner.

TREATMENT OF PUTRESCENT PULP.

Dr. A. W. Harlan's method: 1st. Apply the rubber dam, and wash the crown with sodium-fluosilicate. 2nd. Open the pulp chamber with sterilized drills, and wash the same with equal parts of peroxide of hydrogen and 1,000-th solution of bi-chloride of mercury. He does not favour the removal of the putrescent pulp at the first sitting, but applies in the pulp chamber a dressing of myrtol and cassia (equal parts), and places over it a piece of blotting paper wet with liquid vaseline, sealing the main cavity with gutta-percha, which he perforates for the escape of gas, should any form. Four or five days later he cleanses the root canals under similar antiseptic precautions, and applies in the canals a loose dressing of myrtol, dismissing the case for another ten days, when he fills the root with chloro-percha.

Dr. A. W. McCandless removes the pulp at the first sitting, after adjusting rubber dam, and applies similar remedies, treating at intervals of from one to four days, and at the third sitting filling with chlora-percha.

Dr. Arthur L. Swift, of New York, is careful to exclude saliva from first to last in the treatment of these cases. He removes the root contents at the first sitting, using sterilized instruments and antiseptic precautions, similar to those of Dr. Harlan. After a lapse or three or four days, his second treatment is followed by a dressing of cotton or silk, saturated with eucalyptol, packed tightly in the canal and sealed with gutta-percha. The case is then dismissed for about ten days. He fills the canals with oxy-chloride, or gutta-percha, at his final treatment.

Dr. George Evans does not believe it necessary to exclude saliva from the cavity or pulp canal in a case of putrescent pulp. He is, however, in favour of all antiseptic precautions after the removal of the root contents.

Dr. J. M. Porter does not approve of the temporising methods practised by others. He would remove at the first sitting every portion of the putrescent pulp in the tooth, treating with iodoform and sealing up the cavity. He cannot comprehend how the process of disinfecting the tubuli can be accomplished, when the dead substance is allowed to remain. He believes in getting direct contact with the tubuli, washing out the canals repeatedly with alcohol, alternating with hot air, thus hastening the process of disinfection. To leave pulp canals unfilled longer than is absolutely necessary, he thinks it detrimental to the process of healing. In those teeth with dead pulps which have never manifested any symptoms of pericemental inflammation, he does not hesitate to fill at the time of second treatment, and in a few at the first sitting, especially if the patient has passed the age of forty years. In cases with fistulous opening, he thoroughly evaporates the moisture from the pulp canals with hot air, washes with alcohol and fills at once. He advocates the operation of alveolotomy, where it is not possible to get access to an abscess without enlarging the apical opening, thus anticipating Nature's process and giving the patient relief.

Dr. J. N. Farrar, in discussing this subject, says: Nature is our best guide in these matters. She makes a fistulous drainage from the socket. Drilling through the gums and socket to the interior of the trouble is the only scientific plan of treating a case containing pus." In 1878, he lectured on the benefit of this treatment, and contributed eleven papers containing experimental detail.

Dr. Darby considers this operation of alveolotomy too uncertain, back of the six anterior teeth. He does not think it good practice to drill through the end of the root for the relief of acute abscess.

Dr. G. L. Curtis practises surgical treatment in alveolar abscess, both acute and chronic. He is an advocate of both alveolotomy and of root amputation, when indicated.

Dr. Van Woert advocates immediate root filling in all cases. If a case of apical pericementitis presents itself as a result of septic matter in the roots, he believes that by removing the cause and restoring the parts to a throughly aseptic condition, Nature will do the rest without medicaments or surgery.

Of the operation of alveolotomy, he says: I did not suppose there were any in this advanced age of surgery who would wait for the disease to produce a fistulous opening. The operation would seem unnecessary in most cases."

Dental Practitioner.

OCULAR AFFECTIONS.

By M. Paul Dubois.

The eye and the teeth have numerous relationships, a neighbouring affinity of nerve, blood vessels, and lymphatics. The upper pre-molars, and molars, the canines, in a less proportiòn, are the teeth most likely to give rise to eye troubles. The lower molars have been mentioned in some exceptional cases. Out of twenty instances recorded of inflammatory affections, eighteen had their seat in the upper jaw, two in the lower. In some cases the tooth had been specified; twice the premolars, eight times the first molars, six times the second. In 100 cases of nervous affections, the molars appear thirty seven times, the canines seven, and the incisors once. The wisdom teeth are down for seven; four below, three in the upper. These affections occur especially between the ages of 20 to 30 years, and it will be noticed that this period coincides with the greatest frequency of dental affections. Direct inflammatory transmission or indirect distant irritation have been observed.

Peripheral irritation of the dental nerves may be reflected along one of the three branches of the trigeminal, and manifest itself either by a dental or facial neuralgia, or by ocular troubles. The frequency of affections with a dental origin has given rise to an axiom in ophthalmology: that all treatment of eye-disease should include that of bad teeth, This last, alone, has often overcome intractable cases in which all the resources of the oculist had been employed. Intense acute inflammation only gives rise to transient affections; chronic conditions on the other hand, in consequence of osseous changes, can extend to the lachrymal canal, the lachrymal bone, and the lachrymal sac, by means of a system of intra-osseous canals occupying this part of the face. (Parinaud).

Affections of dentition, those of the wisdom teeth being excepted, do not appear much in the published returns, and in 8,000 patients M. Despagnet has only noticed two cases of kerato-conjunctivitis caused by dentition. In young children the eruption of the first tooth has been accused of causing blepharo-conjunctivitis.

The most serious affections are those arising from a pathological condition of the maxillary sinus (resulting from inflammation or extraction accidents), which may provoke phlegmon of the orbit, amaurosis, exophthalmia.

Nervous affections manifest themselves more frequently than inflammatory ones by direct propagation. The most frequent troubles are amblyopia and disturbances of accommodation, mydriasis and myosis, periorbitis and exophthalmia, spasm, and paralysis of the muscles of the eyelids and eyeballs, phlyctenular affections of the conjunctiva, ulcers of the cornea and hypopion, iritis and irido-choroiditis, glaucoma, amaurosis (Courtaix).

We may note, finally, that the reverse manifestations have been mentioned, and that eye troubles have given rise to odontalgia in healthy teeth.

Revue Internat. D' Odontologie.

ANTISEPTIC PROPERTIES OF TOBACCO.

Professor Tassinarini, in Rome, calls attention to the fact that as far back as in the seventeenth and eighteenth centuries, the use of tobacco was recommended by many physicians as a prophylactic in times of epidemics. In 1842 Professor Ruef, in Strasburg, it is said, stated that all the working men employed in the Royal Tobacco Manufactory had remained exempt from contagious diseases. Recholier made the same observations in 1883, and Walter Cock, of Texas, in 1889, even recommended tobacco smoking as a preventive against tuberculosis. Dr. Vassili, of Naples, in 1888, experimented on a balloon in which a layer of gelatine was sprinkled with comma bacilli. As soon as the smoke from one to four cigars, according to the intensity of the tobacco, was introduced into the balloon, the micro-organisms of the gelatine were completely killed. These various experiments were imitated by Tassinarini and he found that by tobacco smoke the comma bacilli, the bacilli of pest and of pneumonia are destroyed, or at least arrested in their development. In these experiments it was observed that the bacilli of cholera and pneumonia were destroyed within a few minutes, while the bacillus of pest offered more resistance, and the bacillus of typhus was scarcely interfered with. Tassinarini also affirms that smoking delays caries of the teeth, for which reason women, it is alleged, are more afflicted with diseased teeth than men. All these views, of course, should not be accepted as infallible without further demonstration.

Internationaler Pharmac. General Anzeiger.

COMBINATION OF COHESIVE AND NON-COHESIVE GOLD IN FILLING.

By C. N. Johnson, D.D.S., Chicago.

Let us suppose a cavity properly prepared on the proximate surface of a bicuspid, extending well over on the occlusal surface. The proper preparation of a cavity like this implies that the cervical outline shall be as nearly horizontal as circumstances will permit. An abrupt angle between the cervical and lateral outlines is of course impracticable, but the curve should be a rather sharp one, in order to give a broad, level base to the cavity.

The non-cohesive gold to be used should be in the form of cylinders, and the cylinders should be sufficiently large so that when laid along the floor of the cavity with the ends facing the buccal and lingual walls and there compressed the layers of foil forming the cylinder will be wide enough to extend from the wall of the cavity nearest the pulp to the cervical border, and overlap it. The portion of the cavity in which the filling should be started in these cases, is usually in the angle formed by the junction of the lingual with the cervical wall, or, in other words, in the cervico-lingual corner. This statement is made with the reservation that no one method of procedure can safely be followed in all cases. We cannot always obtain an ideally formed cavity, and any modification in the form of the cavity may modify the starting point of the filling, as other processes of operating are modified by circumstances. A large cylinder of noncohesive gold is laid on its side in the cervico-lingual corner, with one end looking toward the buccal wall and the other slightly turned up toward the occlusal surface. This is carefully "coaxed" into position without breaking up the layers forming the cylinder or disintegrating the mass. No attempt is made to condense this first cylinder. It is partially compressed to ascertain whether or not there is going to be a sufficient mass of gold which, when condensed will perfectly fill any undercut, and extend across the floor of the cavity and slightly overlap the cervical border. In shallow cavities one cylinder, of a size so large that it will barely pass through the orifice of the cavity without being torn or disintegrated, will sometimes accomplish this, but in many cases it will require two or three cylinders before a sufficient bulk of noncohesive gold is obtained. When the required amount is in position, a smaller cylinder of cohesive gold is annealed as thoroughly as can be done without melting the outer layers of foil, and this is placed upon the uncondensed non-cohesive gold. A plugger point shaped to conform somewhat to the walls of the cavity, is then brought down upon the cohesive cylinder, and force by hand pressure is exerted to drive the mass directly toward the cervico-lingual corner. This wedges the gold firmly into the angle of the cavity. The noncohesive gold is irresistibly carried before the cohesive, and is adapted to the walls without being punctured and squeezed out of the cavity, as would be the case if the plugger point were brought directly upon it. The cohesive cylinder, when thoroughly annealed, forms an impenetrable mass against which the plugger may be pressed with sufficient force to ensure adaptation and condensation, without breaking up the mass of gold into fragments The cohesive gold is carried into the substance of the noncohesive, and lends solidity and stability to the first portion of the filling. The only means by which these first pieces of noncohesive gold can be condensed independently of the cohesive cylinder without danger of disintegration, is by the of broad-pointed pluggers, and with broad pluggers there is no assurance that adaptation is perfect in undercuts or grooves The spreading qualities often attributed to noncohesive gold must not be depended on to any appreciable extent. It is probably safer to assume that gold, whether cohesive or noncohesive, will only go where it is forced to go by definite and direct pressure, than to depend on a lateral moving of the mass when the plugger point is brought to bear squarely upon it. When the first pieces of gold are anchored in position it will be found that the cervico-lingual corner of the cavity is well covered over, with the gold extending further along the cervical than the lingual border. It is sometimes necessary to use two or even three cylinders of cohesive gold to overlie and protect the noncohesive, but no cylinder except the first should be annealed to a high temperature. The object of high annealing in the first cohesive cylinder is to obtain a mass of gold the layers of which will weld on the slightest pressure, so that when the plugger point is brought against it the layers cling together so tenaciously that great force may be exerted without puncturing it. This quality not being so necessary in the succeeding cylinders they are rendered only semi-cohesive.

When the filling has progressed thus far in the ordinary cavity of a bicuspid, it will usually be found that the gold extends more than half way across the cervical wall in the direction of the buccal wall. The conformation of the cavity viewed at this stage of the operation shows a decided depression at the cervico-buccal corner, and into this depression a cylinder of noncohesive gold is placed, in the same general arrangement as with the first cylinder in the cervico-lingual corner. The end looking toward the lingual wall will slightly overlap the gold already in place, while the other end will curve towards the occlusal surface along the cervical third of the buccal wall. The same plan of anchorage is followed here as with the other corner, a retaining instrument being held firmly against the condensed portions of gold to keep the mass from moving while the process of wedging between buccal and lingual wall is progressing. When the span is made between these two walls and the gold thoroughly condensed along the whole cervical outline, and up the cervical third of the lingual and buccal walls, we have a firm foundation for the filling, which, if the cavity has been properly formed, cannot be tipped or dislodged in any way by mallet force during the subsequent process of the operation.

Up to the time when the connection is fully made between the lingual and buccal walls, and the cervical outline well covered, a mallet of any kind is ordinarily contra-indicated. Hand pressure vigourously exerted in the proper direction, will ensure good adaptation, with less danger of injury to margins. After the floor of the cavity is covered, a mallet should be used to complete the condensation. The first blows should be struck midway between the buccal and lingual walls and the plugger point carried in either direction from the centre toward the walls, the last blow coming on the gold immediately overlying the walls. The cavity is now filled about one-third full. A cushion of noncohesive gold covers the margins, while solidity is secured by a layer of semi-cohesive gold over it. The filling is slightly higher along the lingual walls than in the centre while the whole mass is firmly anchored in place. The most difficult part of the operation is completed, and the process from now on consists merely in building back and forth between buccal and lingual walls. This, for the most part, is done with semi-cohesive gold, but at any point in the cavity where there is a decided undercut or groove, a cylinder of noncohesive gold should be laid into it and driven to place with a smaller cylinder of cohesive gold. As the surface of the filling is being reached, and all margins are protected, the gold should be annealed thoroughly to gain the benefit of its greatest cohesive properties. When the occlusal portion of the cavity is approached a definite plan of anchorage should be followed to ensure firmness of the filling at this point. If the groove running between the cusps and leading to the depression near the opposite marginal ridge is deep, a cylinder of noncohesive gold should be laid in it with the ends looking mesially and distally. A cohesive cylinder should be placed upon this and thoroughly condensed into it, the end of the latter overlapping the cohesive gold already in place. From this point to the completion of filling the gold should be made as cohesive as possible. Where the groove is shallow cohesive gold should be used throughout the entire occlusal portion of the filling. In case the depression near the opposite marginal ridge dips into the dentine much deeper than the groove between the cusps, it should be filled with noncohesive gold nearly to a level with the floor of the groove itself. In these cases the groove is usually shallow and we now have two sections to the filling—the main body in the proximate cavity, and the smaller piece in the depression on the occlusal surface. A cylinder of cohesive gold is then placed in the groove, with one end overlapping the distal section and the other the mesial, and condensed so as to bind the two portions together. Gold thoroughly annealed is used to complete the filling.

It will be seen that the general arrangement of the different forms of gold in a filling of this kind is as follows: Noncohesive gold lines the cervical portion of the cavity and fills any deep depressions or undercuts, semicohesive gold forms the bulk of the filling, while a decidedly cohesive gold covers the surface. The selection of plugger points for this method of filling is important. The question of form is not treated upon in this paper, but a word may be said as to serrations. For the purpose of fastening the first pieces of cohesive gold into the substance of the noncohesive, pluggers with deep serrations are called for. Deep serrations secure an interlacing of the layers, and result in a more stable union between the two forms of gold than can be accomplished with shallow serrations. In the process of building up the filling with semicohesive gold when we are simply adding piece after piece to the main mass to increase its bulk, and not working around margins, deep serrations are indicated on the same principle. But in condensing over margins deep serrations are dangerous on account of the tendency to puncture the gold and injure the enamel borders. Shallow serrations should be used all along margins. As the surface of the filling is approached and the gold is rendered more cohesive, the necessity for deep serrations passes away. When the last piece of gold is in place condensation may be completed with pluggers having no serrations.

The Dental Review.

Dr. G. C. Anthony's method of capping pulps is to "dissolve sufficient gutta percha in chloroform to half fill an ounc bottle. Add oil of cloves, 20 minims; tannin, 10 grains; carbolic acid, 20 minims. Seal and shake till satisfied of a perfect mixture: then open and allow the chloroform to partially evaporate. There will remain a putty-like mass which is always ready for application."

The Ohio Dental Journal.

PROSTHETIC DENTISTRY.

By J. F. Stephan, D.D.S.

In the upper denture, if the canine eminence has not been restored, there is an unnatural expression at the wing of the nose. There are slight depressions just over the superior laterals and bicuspids which make the canine eminence even more prominent and should be produced on every upper denture.

An artificial gum may have been placed upon a case having very full gums. The lip looks thick and puffy, and often the patient is unable to wear the plate. In such a case the anterior six teeth at least, must be set against the natural gum so as to give the natural contour to the mouth. If the artificial gum is allowed to run too high under the upper lip this fulness is also apparent and the plate must be cut down at that point. We are beginning to-day to look upon the artistic adaptation of the artificial denture as most essential to its success.

A denture may lack mechanical adaptation if not properly trimmed. If allowed to ride upon the muscles it will make them sore, and will be displaced every time the mouth is opened. If the bite in a full (upper and lower) denture is very much too long, the patient will experience difficulty in swallowing. When the impression and model have been properly trimmed, i.e., the impression is trimmed to relieve the hard parts, and the model to cause the plate to press upon the soft parts of the mouth, there is no need of a vacuum or air chamber for the plate's retention. However, when this is required so that the patient may more readily learn to use the plate, the impression is merely trimmed for a vacuum relief. This does not destroy the shape of the mouth as the old-fashioned air chamber does. A fine hair-line drawn across the heel of the plate will assist greatly in keeping it in position. Don't be afraid to thoroughly round and polish the edges of all plates, so as to avoid irritation of the mucous membrane; it is very important and is often neglected.

In antagonizing the teeth, a little space judiciously given, will often tend to a more natural appearance. In trying to avoid regularity in setting the teeth, it is difficult not to produce a deformity. The superior lateral should be a little shorter than the centrals and perhaps a little out of line. Of the six anterior teeth the cuspid is most prominent, especially at the neck and is placed under the corner of the mouth. The bicuspids drop a trifle inside the range of the cuspid, and the molars follow in almost a straight line toward the angle of the jaw. You can readily see that with this arrangement, when the patient opens his mouth he does not show a mouthful of teeth as is so often the case where the teeth are set in a continuous curve. The upper anterior teeth should overlap the lowers but very slightly, only so much that when the latter slide forward they will just touch the cutting edges of the former. It is a common mistake to let them lap too deeply and the result is the upper plate is continually tilted. The inner cusps of the bicuspids and molars should strike the heaviest, a little heavier, if possible, upon the bicuspids rather than the molars.

The Ohio Dental Journal.

PYROZONE.

By Dr. W. E. Walker.

Pyrozone is manufactured in three grades : (1) medicinal pyrozone, 3 per cent. or 15 volume aqueous solution of hydrogen peroxide ; (2) antiseptic pyrozone, a 5 per cent. solution in ether, and (3) caustic pyrozone, a 25 per cent. etherial solution.

(1) Medicinal pyrozone has about the same range as peroxide of hydrogen, but with the advantage of absolute stability and exact strength. It is a rapidly-acting, non-acid, odourless antiseptic and pus destroyer. Injected into abscesses, or sprayed upon ulcerating surfaces, it decomposes pus with great rapidity, causing instant effervescence, bubbling and frothing as long as any pus or extraneous organic matter remains. It is also a good bleacher, though less penetrating than the stronger grades. When it is desired to be absolutely aseptic, Dr. Rhein dissolved 1¾ grains mercuric bichloride in 2 ounces pyrozone, 3 per cent, which can be used to great advantage in cleansing septic root canals. Being non-toxic, medicinal pyrozone may safely be freely used as a mouth

wash. Dr. C. B. Atkinson considers it of special value in the treatment of teeth with pitted or wasted enamel, as it both bleaches the teeth and retards the destructive work of dental decay. In regard to its stability, Dr. Rhein says "it does not seem to lose its stability after any length of time."

(2) Antiseptic pyrozone, a 5 per cent. solution H_2O_2 in ether, is a more powerful antiseptic, which acts on pus with great energy, the rapid evaporation of ether leaving the concentrated H_2O_2 behind. It is very useful in removing the green and brown stains about the necks of children's teeth, and in bleaching teeth, applying it on a pledget of cotton. If the soft tissues are accidentally touched, apparent coagulation occurs, but the tissues soon resume their natural colour, with no eschar or slough and no permanent change of tissue. This 5 per cent. solution is of great value in sterilizing about bridges and crowns, the rapid evaporation of the ether aiding in procuring the perfect dryness so essential in using the soft cements. It may also be used to spray cavities of decay when ready for filling, sterilizing and drying the cavity at the same time. It is also valuable as a spray on ulcerating surfaces, apthous patches, congested fauces, etc. Great care must be taken not to allow it to touch an exposed pulp, as it expands the tissue and would cause severe pain. It must be borne in mind that pyrozone is death to all extraneous organic matter, whether as pus or in a flow of venous blood, contact with either of which will produce some degree of effervescence and froth. It is an absolute indicator of pus; then *only* after the territory has been bathed and rinsed and made clean. Subsequent effervescence may then be considered an indication of pus.

(3) The 25 per cent. pyrozone is pronounced by Dr. C. B. Atkinson "probably the best bleacher of teeth that has ever been offered." He says: "Its effect is exceedingly prompt, and the results are permanent." In deep pockets of pyorrhœa alveolaris a small tent wet with the 25 per cent. will, in most cases, terminate the suppuration. Is also valuable in root canals with putrescent pulps. In using the caustic grade care should be taken that no excess oozes from the tampon. Any excess should be removed by bibulous paper. Tannin and glycerine will relieve the pain and burning caused by accidental action upon healthy soft tissues. This burning is more severe on healthy than upon diseased tissue.

Southern Dental Journal.

WHAT PRODUCES CARIES.

By Dr. Sudduth.

The fermenting of meat will not produce decay. Putrefaction will not produce decay. Putrefactive changes of meat will not produce decay. You can only have decay of the teeth, as we understand the term "decay," by the action of one acid, and that is lactic acid. Change in the quality of the teeth depends upon three things: In the first place, it is a matter of heredity. Take the prevalence of syphilis in any one race of people, where it has been first introduced into a race or into a country, and you follow down the history of the teeth of those people, and you will find that the children and grandchildren inherit a lack of lime salts in the bones, that is also reflected in the teeth. The teeth of individuals, whose parents or grand parents have suffered from syphilis, are very poor in quality. In studying the effect of syphilis on different people, we have that one thing, the deteriorated condition of the general health reflected in the development of the teeth. There is a lack of good development. There is a lack of assimilation on the part of the individual, and it is shown in the teeth just as well as it is in the bones. It is this condition, called rachitis, which is so common.

A change in food habits affects the teeth. Take a dog, for instance, as a typical example of the carnivorous animal. The character of food that a dog eats is self-cleansing. The teeth are clean and white. This food, if it remains in the mouth, and ferments, will not produce decay. But take a petted dog, poodles and other dogs, fed on dainties and bonbons, and you will find pyorrhœa alveolaris and decay. If that is so in regard to the teeth of animals, it is doubly so in regard to the teeth of men. To those people that live on a purely meat diet, like the North American Indians in early days, and the Esquimaux down to the present time, decay was almost unknown. You may examine the skull of the primitive races of the Indians of North America, and decay is almost unknown. As they come under the same environment as Europeans and Americans, decay becomes more and more apparent. Change of diet, then, is one of the things that tend to produce decay.

The result of eating starchy food is that it is converted by fermentation into glucose, and further fermentation produces lactic acid before it is taken into the mouth. Now, we know that acid foods, those foods that are acid when taken into the mouth, never produce decay. They produce erosion of the teeth. Take the grape cure that has been used so extensively in Europe, with its fruit acid, and the use of mineral acids, they do not produce decay, they produce erosion. They roughen the surfaces of the teeth, which are more easily abraded in the process of mastication, so that the teeth wear down more quickly, But unless there is eaten the starch, or glucose itself, through which fermentation is going on in the mouth, decay is not produced. The principal portion of the diet of the Hawaiians is poi, and glucose would exist before it is eaten. If they were eating the product as we do, flour, and things of that kind, they would have starch taken in the mouth, and the action of the saliva would convert it into glucose, which would then be converted into grape sugar and into lactic acid. The history of all people is, that when they come within the range of civilization, and are dependent on a starch food, decay is more prevalent than it was before. It is common in the East with the servant girls who come from Europe, that after they have been in this country six months or so their teeth begin to decay. It has nothing to do with the change of condition, other than as it is affected by the change of diet. A large portion of those servant girls that come from Sweden, Norway, Germany, and Ireland come from the farms. They go into the kitchens of our American homes, and there their diet is changed from the self-cleansing, coarse food, which is not starchy and sticky like the food that is prepared in American homes. The results are seen very quickly. Decay sets in and the teeth are broken down. If they developed the same habits of cleanliness that American children are brought up with, and kept their teeth clean, they would not have as much decay as they have, but a tooth-brush among the peasants of Europe is an unknown quantity, and they loose their teeth in this country before they learn what a tooth-brush is for.

Fermentation is constant in the mouth whenever starch is present. We want to distinguish between erosion and decay. Erosion may be caused by general acidity of the saliva, but decay and death, as we understand the term, is the result of fermentation.

Items of Interest.

TECHNIQUE.

By E. C. MOORE, D.D.S.

IT is not the purpose of this paper, to enter to any great extent into the descriptive "technique," but its mission is to insist on the importance of "technique," in whatever it becomes our duty to undertake to perform. By way of assisting in the impressing of this important factor upon all concerned, the author speaks of some of the successive technical steps in the construction of a set of teeth, the common ordinary everyday upper rubber set. A correct model is the foundation upon which to build a set of teeth. This is absolutely necessary, and to get a correct model we must have a correct impression. It is the belief of the writer that this is procured with more certainty by the use of plaster of Paris than with any other impression material. A careful exploration of the mouth is made, noting the different degrees of density at different points, and upon which the plate is to rest when completed, in order to make such changes in the impression as will procure a suitable model. An impression tray is selected which will make the most uniform distribution of plaster over the surface of which we desire to get the impression. If the shape of the mouth is such that it is difficult to make such selection from the impression trays at hand, the existing discrepancy must be compensated for in some way. Usually the use of wax or gutta percha will answer the purpose, placed in the impression tray at such points where the greatest discrepancy exists. When this is done, the amount of plaster required is reduced to the minimum and equally distributed over the surface which we wish to duplicate. The advantage of this is at least two-fold, it annoys the patient less, and secures a better impression, and for impressions for partial sets it has many advantages beside these.

With our tray thus prepared, a small amount of plaster is placed in the tray, and the tray placed on the instrument bracket, then, with a spatula, some plaster is placed at the highest point of the arch and a little on each side of the centre. Now, the tray with its small amount of plaster is placed in the mouth and gently forced to place, and with the thumb of each hand press the lip back to place, which will expel the exuding plaster and relieve the tension or contortion of the smaller muscles and tissues of the lip, and their consequent incorrect imprint in the plaster, then, by placing one finger of either hand in the centre of the palatal portion of the tray, it is held thus until the plaster is quite hard. If the shape of the mouth is such that the plaster must break in order to remove it, the patient should be cautioned to remain quiet long enough to remove, with a long pair of pliers, the detached pieces. Under no circumstances should the fingers be used for this. Instruct them to avoid this, which will keep the fractured edges of the detached pieces clean, so that they will readily fit back in their places. That portion of the impression coming away with the tray is placed on a blotting pad,and the pieces as they are removed are placed by the side of the tray ; those belonging to the right side of the mouth at the right of the tray, and those of the left to the left. This blotting pad, you will see, answers a three-fold purpose : of a nice clean piece of paper upon which to lay the impressions, to keep the instrument bracket clean, and something on which to carry the impression to the laboratory ; and it also assists in the hardening of the plaster by absorbing the moisture, so that in a few minutes it may be handled without fear of breaking in the process of putting together. If these precautions are taken, you can easily see how confusion is avoided in placing the detached pieces back on the impression. When this is satisfactorily accomplished, the pieces are glued firmly to place by flowing a little wax on the outside over the joints. The rim is then trimmed to near where the rim of the plate is to extend, making a well defined edge on the impression, which produces a ledge or shoulder on the model which is trimmed to about one thirty-second of an inch projection, and against which the wax base or trial plate terminates, and subsequently a line to which the investing extends when putting in the flask, and makes a clean right-angled separation. However, before pouring the model, the impression should be thoroughly lathered with soap suds and allowed to stand until the plaster is mixed. This should be thoroughly washed out, enough having penetrated the plaster to make a good parting, and it in no way interferes with good results. If anything is used besides simple clean water, let it be first, soap suds or lather, second, sandarac varnish, and thin shellac, but never oil.

The Dental Journal.

THE BRIDGE-WORK FAD.

By Dr. S. F. Gilmore, Princeton, Ind.

This is an age of "fads,' even in dentistry.

Perhaps the patrons of bridge-workmen are the true sufferers, judging from cases that have come under my observations, both in this country and in Europe in the past few years. In looking for a young man to take care of my office, I found that it was a current belief among those with whom I corresponded or came in contact, that the high standard of their ability should be inferred from the fact that they could make bridge-work. I would consider it much more satisfactory evidence of a man's attainments if he were to assure me that he could "stop toothache." For this is therapeutical, and the bedrock of the profession.

Let a man seek with heart and mind the knowledge necessary to enable him to diagnose, following the accomplishment of this art with the ability to apply or prescribe the remedies indicated.

I would classify attainments in the following order:

1st. Therapeutics.

2nd. The selection and insertion of the proper materials for arresting decay in carious teeth.

3rd. The selection and artistic arrangement of a set of artificial teeth.

4th. If he is able to judge of favourable conditions for a bridge—make it.

While in the office of a neighbouring dentist a few days ago, a lady called to consult him, or rather to have him relieve her of a 200 dollar bridge that had been mounted a few weeks before, on six or seven diseased teeth and roots, by another dentist, who styles himself a bridge-workman. The mechanical part of the work was good, but a maker of artificial limbs might, with as much propriety, cement a wooden leg on a gangrenous stump.

[*Dominion Dental Journal.*

THE RECENT ACTION OF THE GENERAL MEDICAL COUNCIL.

The potent objection to recognising American degrees is that the preliminary requirements are much higher in England, and they do not desire to recognise any diploma whereever obtained unless it represents a grade of preliminary requirement equal to the English schools. There can be no question, we think, but that their preliminary requirements are very much higher than in any of the American colleges, and it seems to us they would do well to adhere to that argument and drop some of the other reasons spoken of in their manifesto. The action of the Council and the remarks made are interesting and instructive.

Western Dental Journal. (*Editorial*).

Dental News.

MEDICAL MEN AND DENTISTS.

Mr. Sewell writes to the *Lancet* as follows :—

The sentiments expressed by "Surgeon" in the last issue of *The Lancet* are certainly not shared by the vast majority of the medical profession. Qualified dentists, whether medical men or not, are not less imbued with gentlemanly and professional spirit than their brethren who practise in other departments, and, whatever exceptions may exist, dentists, as a body, will be found to act according to the common rules when rendering services to medical men. It is certainly not the rule for dentists to accept fees from medical men for professional services. With regard to the latter part of "Surgeon's" letter, he is mistaken in his belief that qualified dentists advertise or employ "shop window shows." Whilst the feeling against these practices is as strong the means of suppressing them are as ineffectual in the dental as in other branches of the profession. There are relatively fewer advertising qualified dentists than advertising medical men. The bulk of those so offending are unqualified pretenders of exactly the same type as are to be found practising more or less under false pretences in many departments. If the dental profession is to be reproached for the offences of the advertising dentist the medical profession must be stigmatised on account of the malpractices of curers and quacks whose advertisements disgrace so many newspapers. It must, moreover, be pointed out that medical quacks are often enabled to pursue their nefarious business through the aid they receive from qualified men who act as "covers," and it is well known that any advertising dentist able to pay for such services can always obtain similar assistance from a medical practitioner. If, as "Surgeon" suggests, dentists deserve to be degraded because of the conduct of disreputable qualified men, and are to be made accountable for the misdeeds of the horde of parasites who cling to the profession and illegally assume its titles, the whole medical profession, which has certainly equal power to purge itself, must deserve at least similar treatment.

VACANCY.

National Dental Hospital, Great Portland Street, W. The post of House Surgeon is vacant. Applications to be made on or before the 21st October to the Secretary.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
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British Journal of Dental Science.

No. 618. LONDON, OCT. 16, 1893. Vol. XXXVI.

A CASE IN PRACTICE.

Persistent Neuralgia after the Extraction of a Tooth.

By R. Denison Pedley, F.R.C.S., L.D.S.

In October 1888, Mary S——, aged 29, Laundress, sought advice for intolerable pain in the lower jaw. Her family history was good, and she had had no previous illness with the exception of a poisoned arm from the bite of a dog.

Six weeks before, she went to a chemist in consequence of toothache in a canine tooth in the lower jaw on the left side. The tooth was removed with considerable difficulty, and the patient was relieved. Three days later acute pain came on. The patient consulted a dental surgeon who lanced the gum and removed some splinters of bone; and told her to return in a week. The pain continued night and day, so that another visit was paid to the dentist and he removed the lateral on one side and bicuspid on the other side of the canine socket. The patient could not say if these teeth were carious. No relief followed this operation, and she has suffered night and day since.

The patient was a thick-set, healthy looking girl, evidently in much distress from pain and loss of sleep, complaining of constant pain where the tooth was taken out. The pain is "throbbing and shooting" worse at times, starting from socket of canine and going round to the ear on the same side, often "like knives digging in." The pain is worse at nights when she is in bed.

On examination, the mouth was healthy, patient had lost many teeth, only three remaining in the lower jaw, eight in the upper jaw. On the left side about the position of the lower canine, the gum was much inflamed and swollen, showing an unhealthy granulating surface, with small spicules of alveolar plate visible here and there. On probing, an acutely painful spot was felt deep down in the canine socket, and apparently no portion of a tooth was there. Much probing caused agonizing pain. The gum was painted over with chloroform and carbolic acid. The spicules of alveolus were removed and the patient was ordered a Chlorate of Potash mouth wash, also Pil Rhei gr. iv to be taken at night.

October 28th. The pain was less for a night or two, but had come on again as acute as ever. The gum was painted again and Mist. Pot. Chlor. repeated.

Nov. 3. For two nights the patient has been in agony, not so bad in the day ; she says she cannot go to bed for fear.

The gum still looks unhealthy. It was decided to administer Nitrous Oxide and examine the socket of canine, this was done and careful probing proved that no portion of the tooth remained. Chlorodyne m.xv was ordered each night, also Pil Rhei gr. iv.

Nov. 8. Patient has been much relieved for four days and nights, but yesterday and last night she has suffered much. Probing was painful. Nitrous oxide was administered and a rose-headed drill was introduced and run well down to the bottom of the socket, then carefully removed. ½ gr. of opium was ordered to be taken each night.

Six days later the girl returned and said she was now quite well.

REMARKS.—Persistent pain after tooth extraction is by no means rare, and in the majority of cases arises from one of two causes. A small portion of a tooth may be left in the socket. An unhealthy condition of the wound may be induced by poisoning from dirty instruments, or from various causes of ill health. Both these causes were eliminated after careful treatment. From the history and the success of the subsequent treatment, I conclude that the persistent neuralgia was due to a traumatic neuroma or an enlargement of nerve at the point of separation from the tooth. Such cases are rare after tooth extraction; but are not unfrequently found in the stumps of limbs after amputation. The enlargement is bulbous, and microscopically is found to consist of fibrous tissue and nerve fibre. This gives rise to various nervous symptoms, pain; and numbness if sensory fibres are affected. Muscular twitchings or even epileptiform convulsions, result from irritation of motor fibres.* There is only one form of treatment advised, viz., amputation of the neuroma. In the case above mentioned a rose-headed drill answered the same purpose.

AN excellent device for holding the sandpaper when smoothing off the rubber plate is a piece of rubber tubing about an inch and a half long and three-eighths of an inch thick, the sandpaper rolled around the tubing. The rubber holds the sandpaper with just sufficient firmness, and allows the paper to fit and accommodate itself to the contour and depressions.

L. A. Teague.

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*Vide Heath's Dictionary of Surgery.

CONTRIBUTIONS FROM THE DENTAL DEPARTMENT OF ST. THOMAS'S HOSPITAL.

By C. E. Truman, M.R.C.S., L.D.S.

(St. Thomas's Hospital Reports).

Two Cases of Epulis which came away entire, attached to the Teeth.

A young woman was sent to the dental department with an epulis on the lingual side of the lower jaw. The labial side of the jaw was not implicated. This growth was about the size of a walnut, very vascular, and bleeding at the slightest touch; the surface was cauliflower in appearance, and lately had grown rapidly. Apparently it was attached, its whole length, to the gums. The teeth were not pushed out of position by the growth, but the left canine and lateral incisor were loosened. My opinion was that it would be best to take out the lateral incisor and canine at once, and then wait some little time to see if a further operation would become necessary. I did not then and there extract the teeth, as I thought the surgeon wished the case to remain as it was until he had seen it again, but the afternoon of the same day, first the lateral incisor, and then the canine were extracted, and the entire growth came away with the canine, attached to the tooth. The epulis grew from the upper part of the fang of the canine tooth, surrounding its neck, and growing from the peridental membrane. "The submucous tissue, or the soft tissue contained in the Haversian canals of the bone, usually affords the site of the disease, which in its growth carries before it the superjacent mucous membrane." (Tomes' "Dental Surgery.")

The second case was sent to me by Mr. Pitts. This was also the case of a young woman, F——, æt. 20. About three or four months before the patient came to the hospital, she had observed a small oval tumour growing from the inside of her lower jaw at the bicuspid teeth on the right side. She had had very little pain or bleeding from the surface of the growth. On examination at the dental department, a fibrous growth, about three quarters of an inch in length by half-an-inch broad, was found growing by the inside of the first and second bicuspids on the right side. The epulis was hard and mammilated on the surface, with but little hæmorrhage on manipulation. Both the bicuspids were loose, and as the growth sprang away from the portion of the jaw formed by their sockets, it was impossible to say which was the most at fault. The one which was the most loose, and which seemed to be the cause, was extracted. The next week, when the patient came again, the extraction of this tooth was found to have produced no effect upon the epulis, so the other bicuspid was at once extracted, and the growth came away entire with the tooth, growing from the peridental membrane.

Many surgeons think that in cases of epulis it is necessary to remove some portion of the bone of the jaw at the seat of the growth, as the epulis, in their opinion, always springs from the periosteum of the bone. For some time past it has been my opinion that this is not always necessary, and in several cases I have taken out the teeth only, and not cut away the growth, as in many cases it seemed to grow from the portion of the alveolus, close round the neck of the tooth or teeth, and that as soon as the teeth were extracted, the socket being absorbed, the epulis withered away and did not recur, or it seemed as if the epulis grew from the portion of bone which formed the septum between the sockets of the teeth involved, and that by extracting both teeth, the sockets became obliterated, and this portion of the alveolus was thus destroyed, and the epulis did not recur.

Cases in which I have tried cutting away the epulis and as much of this septum as I could reach without extracting the teeth, so that there should not be the disfigurement caused by the loss of the teeth, have not, in my hands, proved successful. The epulis has always returned, and the tooth or teeth have had to be removed eventually. But from these two cases, it seems as if the growth springs, at all events in some cases, from the alveolo-dental periosteum or root membrane of the tooth (or the peridental membrane). Tomes has demonstrated that the peridental membrane is attached on one side to the tooth firmly, and on the other to the socket more loosely, thus always coming away with the tooth on removal, but that there are not two membranes, viz., a periosteum of the bone lining the socket, as well as one of the tooth covering the fang, but only one membrane stretching across from tooth to socket, the fibres of this membrane running across in an oblique direction, slinging the tooth, and allowing it to rise and fall in its socket. This movement is well seen in inflammation of this membrane.

May not these growths sometimes originate in this peridental membrane, and, as in these cases, come away with the tooth, if the tooth is taken out early enough? But in cases where the growth is allowed to remain without being interfered with, may not the growth spread to the periosteum of the bone which is continuous with the peridental membrane at the edges of the socket, thus implicating the bone, and making it necessary to remove portions of bone? If this view is correct, early extraction, as I have often found, is all that is required, thus leaving much less disfigurement. It will also account for the persistency of the growth, as long as the tooth or teeth remain in the mouth.

It is so simple to see how a new growth originating in the peridental membrane should spread. This membrane, if traced outwards, will be found to be continuous with the periosteum of the bone at the edge of the socket, and also to be continuous with the connective tissue of the gum, and thus, in those cases originating in the peridental membrane, if seen early or slow growing, the epulis comes away entirely with the tooth ; but if neglected or quick growing it spreads either to the periosteum of the bone, or to the surface of the gum, involving one or both, when, of course, removing the tooth is not sufficient, and portions of the alveolus have to be cut away, causing much more disfigurement. So it would seem that the earlier the tooth or teeth are extracted the more likely it is in these cases to prove a permanent cure.

These cases of epulis growing from the root-membrane seem to be quite common. Since writing the above, I have seen another case at the Dental Hospital. This was an epulis growing near the first lower molar of the left side ; this growth was very hard and pale in its upper portion, but the lower part was very vascular and spongy. This also came away attached to the root membrane when the lower molar was extracted.

A young woman was sent down from one of the wards with alveolar sinus of the upper jaw of left side. On examination there were found the three roots of an upper molar, apparently the cause of the sinus and discharge. These roots were at once taken out. As the discharge did not stop, and the jaw did not heal as it should do, Mr. Clutton (under whose charge the patient was) explored, and with a probe could feel something like india-rubber. The next day the patient was given an anæsthetic, and a thorough examination made. Mr. Clutton's idea that he could feel something like rubber was quite correct, as he soon extracted a piece of old drainage tube.

Two Cases of Abscess pointing on Face at Root of Nose just below the Eye.

These two cases were almost identical. Both were boys under nine years of age, the abscess starting from, and caused by, temporary canine teeth. The teeth were extracted, and a probe could be passed up the socket into the abscess. Now the difficult part to determine was whether these abscesses were inside or entirely outside the bone. Naturally, if the probe went up the socket of the tooth, which was in the bone, one would be inclined to think that the abscess must also be inside the bone. But they did not seem to be so situated. On passing a knife up inside the cheek, and cutting up between cheek and bone, the knife went into the abscess and entirely emptied it. So all doubt was set at rest. The abscess was entirely outside the bone, on the superior maxilla higher up the face, past the end of the socket of the canine tooth just below the eye. One must suppose that the abscess originated in the canine tooth, and had pierced the bone at the apex of its socket, and thus burrowing beneath the muscles of the face, eventually pointing just below the eye. The pus in this case had probably burrowed between the bone and its periosteum.

Nellie H——, æt. 17, October, 1892. She said she had a swelling on the right side of her face, over the angle of the lower jaw, for about eighteen months. Eight months ago she had had the lower first molar of this side, which was carious, extracted, as it was thought to be the cause of the swelling. She had had more or less discharge ever since. When she came to the hospital there was a swelling over the angle of the lower jaw on the right side. The wisdom-tooth was not erupted, the second molar was quite sound, and there was apparently very little the matter with the gum ; but on close inspection there was found to be a very small sinus just in front of the second molar with a slight discharge of pus. With difficulty a probe could be passed down this sinus, running to the outer side of the tooth for about an inch and a half. The patient was given gas, and I took out the second molar. As the tooth was being extracted, quite a lot of pus came away. On examination a few days after there was still a discharge, but the wisdom-tooth could not be felt. Probably the whole cause was the wisdom-tooth.

A man, about 35, came with fracture of the lower jaw. There was a good deal of displacement, but it was only broken in one place. In this case I put on a Hammond splint, of which splints I keep a quantity at the hospital made of different sizes ready for use. This I have done for a long time past, and it was my own idea to have sets of these splints made beforehand, and from these sets to select the one which was suitable in each case. The splint was put on the first time of seeing the patient, and the jaw came into very good position. After the first visit this man did not come to the hospital again for several weeks (five or six). Therefore at the second visit his jaw was firmly united. I took the splint off, and the articulation of the teeth was absolutely perfect. Now, after this, it cannot be said that it is necessary to make each splint for each individual case.

Having the splint made before saves so much time and trouble both to surgeon and patient. The result could not have been better than this one was, and I only saw the patient twice—once to put the splint on, and once to take it off again. It seems to me that one of the great advantages of Hammond's splint is that the upper and lower teeth are allowed full liberty to articulate during the whole time of the uniting of the fracture. The splint does not hold the portions of the jaw absolutely rigid, and in this way the upper teeth help very considerably to force the broken jaw into the right position. I generally put the splint on at the first visit, but do not pass the thin wire round all the teeth, but let the upper teeth help to rectify the displacement, and after a day or two pass more wires round more teeth, and tighten up the wires put on at the first visit. This method is also less painful and irritating for the patient.

Mrs. T——, who was aged 39, and had five children living, was sent by a medical man for me to see if the swelling she had on the right side of her face was caused by any of her teeth. On examination I found she had a swelling about the size of a half-walnut on the right side of her face over the angle of her jaw. It was semi-fluctuating, but did not feel like fluid unless it was thick grumous fluid. The swelling was situated in the thickness of the cheek, and was not an alveolar abscess, nor could I see that any of her teeth were the cause. The swelling was apparently in the masseter muscle, and this would account for the difficulty in opening her mouth she complained of. The skin over the swelling was not inflamed, nor was it implicated. She noticed this swelling about five months before, and it gradually increased in size. Then she began to find a difficulty in opening her mouth, which was getting worse. She could not open her mouth wide : it seemed stiff, and eating made her jaws ache ; she could not eat ordinary food. and had been obliged to eat soft food. On examining other parts of her body, I found a swelling of a similar character on the back of her head, on the occiput, which she had had some little time, feeling much the same, and tender on pressure. On still further examination I found the left sterno-clavicular articulation thickened and painful. She did not tell me of these swellings, but left me to find them myself. But she now told me that she had had a swelling in the left cheek similar to the one on the right side, which had gone away of its own accord, and has left no trace to be found now.

Her five children, she said, were all healthy, and were aged

13, 11, 5, 3 years, and 7 months respectively, but she had had three other children who had died, the first of which died at the age of four years; the second was three days old only when it died; and the third child was three months. She has also had one miscarriage. I could get no further history in this direction, but I concluded that the swelling was syphilitic in character.

A young man came with broken lower jaw on right side at bicuspids. In this case there was great displacement; the fracture being oblique; the ends of the bone were interlocked, and I could not get them into position. I proposed that he should have an anæsthetic, so that when the muscles were relaxed the difficulty would be overcome, but the man objected strongly to having an anæsthetic, and said he would much sooner bear the pain. I did not feel at all hopeful of getting it into place, as it was so firmly fixed and did not seem to move, but after some little time, by manipulating in different directions, the ends came into place suddenly, and then there was no more difficulty. So it seems that in cases like this, a little patience and perseverance will overcome the difficulty.

CASE OF ERUPTION OF CANINE UNDER THE CHIN.—The patient was a little girl aged six years, with a tooth erupting below her chin. On examination it was found to be the left lower permanent canine. Three of four years before she had had diphtheria very badly. When she was convalescent, about a fortnight after, the lower jaw began to swell uniformly, and an abscess formed, discharging a good deal of pus. Soon after two teeth were extracted, liberating a quantity of pus, and a sequestrum separated, when matters seemed to quiet down. Subsequently however, four pustules appeared on the chin; these burst leaving sinuses, from which necrosed bone came away. Three of these healed, while from the fourth, eighteen months later, the left lower permanent canine appeared, apparently turned upside down, the tip of the canine pointing downwards. This tooth was extracted, and the patient went away cured.

In hunting up similar cases, I found in the museum at the Dental Hospital a case of a lower wisdom-tooth erupting on the cheek above the angle of the lower jaw. Salter mentions a case of both superior lateral incisors erupting into the nostrils. There is also a skull in the museum of the Royal College of Surgeons, which shows the eruption of an upper right canine tooth into the nostril. Dr. Ward Cousins had a case in which a temporary left canine had become encysted in the left orbit, and I believe the tumour was removed. In another case, under Mr. Carver of Cambridge, a boy six and a half years old had a canine tooth erupting through the right lower eyelid. The tooth had commenced to appear when the boy was four and a half.

Nine or ten months later I was surprised to see this same little girl at the hospital again. This time she had a second tooth coming from the same sinus through which the canine had already come. This second tooth, on examination, proved to be the bicuspid, following in the road already made for it by the canine. This tooth I also took out, and the child is, I believe, cured. Time only can show if any more teeth will come and erupt through this sinus.

In this case it seems to me that the teeth, as they generally do, took the course where there was the least resistance. The abscess had broken down the bone, and there was only soft structure to come through. On looking at the dried bone in the museum, if dissected to show the permanent teeth lying in the jaw before eruption, the teeth will be found to lie very deep down in the jaw at this time. The temporary teeth are seen in position in the mouth, and the permanent ones lying very deep down embedded in the jaw, below the fangs of the temporary teeth. Now if we imagine the outer surface of the bone broken away by this abscess, it will be seen that it would be quite easy for the canine to erupt in the position it has, without altering the direction so much as at first sight it appears to have done, and of course it would be still easier for the second tooth to follow the road made for it by its predecessor.

A CASE OF PARALDEHYDE HABIT.

By Dr. Frank Elkins.

The following case was reported in the Edinburgh Medical Journal.

The patient, a man of 65, was admitted as a voluntary patient to the Royal Asylum, Edinburgh, on 23rd November, 1892. Two years before admission he commenced to use paraldehyde for the relief of insomnia, from which he had long suffered. A habit was soon established, and the dose of the medicine increased, until shortly before he entered the asylum he was taking sixteen ounces of paraldehyde a week. He had lost two stones in weight, and was so weak that he had to be fed like a child. The action of the heart was weak and irregular, the appetite abnormally large, and the patient suffered from hallucinations of sight and hearing, and from delusions of an unpleasant character. He proved himself to be a most troublesome patient, but was discharged in good health on 21st February. Marked improvement appeared to date from the administration of sulphonal.

British Journal of Dental Science.

LONDON, OCTOBER 16th, 1893.

DENTAL ADVERTISING.

If it were possible to obtain a full and true confession of opinion from a large number of men who depend upon advertising to secure dental practice, we imagine that the publication of a well-edited digest of such documentary evidence would prove interesting reading to all concerned, and a revelation to the patients. It is, however, too much to expect that any material of this kind will be forthcoming, and discussion of the old question, which seems ever with us, must perforce be confined to much the same lines as have been travelled for many years. Still, from time to time the expression of individual opinions are heard from those who have left the unclean thing ; and apparently nowhere is the saying that 'a convert makest the bitterest persecutor,' more true than in the ranks of those who thus invade the lofty regions of ethical dentistry, and straightway feel it their duty to insist upon the salvation of the misguided brethren left behind. We have heard, on the part of such a convert, an expression of relief that no longer could he be called upon to supply an artificial tooth to a patient for fee not exceeding the proverbial sum which self-made city magnates occasionally boast was the only coin with which they came to town. We have heard the same reformed practitioner attempt to describe the degradation he suffered when, as a result of the enticing advertisement, bargains had to be arranged with a shrewd, close-fisted, business man (too ignorant to appreciate good work even if he had it), or, perchance, with a trusting governess or domestic servant whose savings were thus to be invested, and who might be expected under proper persuasion to pay not only her own share of the advertisement but her stingy predecessor's also. In many other respects which might be enumerated the ways of such a practitioner are doubtless harder than many of us imagine. If we may believe certain reports competition is robbing advertising of its chief joys, and it does not pay so well as it did. And yet it must be the competition of prices and not of numbers, for those who are old enough to make comparisons declare that the system is perceptibly diminishing. We of course have been alluding to it in its worst form for the purpose of discussion, but it must not be forgotten that milder modes exist than the newspaper announcements of prize medal teeth at lowest prices. The day when all attempts at self-glorification will become obsolete is probably far distant. The natural tendency afforded by the improved circumstances under which, alone, new names are now added to the Register will do much, but who is meanwhile to decide what is, and what is not, to be considered ethical? Some apparently think that the General Medical Council should be asked to declare what constitutes disgraceful advertising; and if the matter is ever considered, the expression of opinion on the part of individual members of Council, as to the line of demarcation, will be interesting. Quite as instructive, too, would be the remarks of those attacked. From the very motives which characterize them, we may be sure that they would not remain silent; and especially for those who were originally registered whilst advertising, and have never given any "solemn undertaking," many lay defenders would arise in support of their "rights."

Perhaps under all the circumstances it might be well to allow the soul-less advertisers to die a natural death whilst seconding the action of the State, which obliges the public to teach itself and learn good from evil. Far more important, in our opinion, would be a concentration of action in regard to the behaviour of certain men who are not on the Register. The General Medical Council has already done its best to cut off the supply of "covers." As an outlet for the energy of would-be reformers there remains the possibility of testing the value of Clause 3 of the Dentists' Act. In response to a recent correspondent, we expressed the opinion that the point to be decided is, practically, whether the application of a description to a *place*, and not necessarily the assumption by the *person*, might be held to claim, by implication, that the person so using it is specially qualified to practise dentistry. Every one who is not in favour of absolutely free practice would be glad to find that judges interpret the clause in the same sense as the College of Veterinary Surgeons found so beneficial.

But even if this attempt should prove unsuccessful it would be wise to reflect before agitating for a repeal of the Act, as has also been suggested. It is very likely that, in the present state of public feeling and political views, new legislation would be in a backward rather than in a forward direction, giving increased opportunities and facilities for unrestricted practice of all kinds.

OXYGEN FROM THE AIR.—A new method of obtaining oxygen from the air is employed by a German chemist, G. Kassner, who employs a compound of lime with peroxide of lead. The calcium plumbate in the form of spongy porous masses is first allowed to absorb carbonic acid from moist furnace gases and then converted into carbonate of lime and free peroxide of lead. This mixture on being heated in a retort gives off oxygen, any carbonic acid being got rid of by passing the gas over fresh plumbate. The residue in the retort consists of a mixture of lime and litharge, and this is reconverted into plumbate by driving a current of air through the heated mixture in the retort, and the whole process can then be repeated. Brin's method, which is generally followed, consists in exposing heated baryta to air from which the carbonic acid has been removed. The per-oxide of baryta gives up its oxygen when exposed to a higher temperature and the reduced oxide may be used over again. In another, continuous process manganate of potash is employed and the reduced manganese is allowed to re-absorb oxygen from the air.

DRAINING THE ANTRUM.—In the Epitome of the *British Medical Journal* is a quotation from an American Journal, of what is described as a new improved method for draining the antrum of Highmore. The cases are usually troublesome and any improvement in treatment would be welcome. In this instance, the bone is perforated by a drill three-sixteenths of an inch in diameter, worked by an electric motor, and the canal is made in a slightly oblique direction backwards. A piece of wood, with a protuberance at the lower end, is afterwards inserted and an impression taken with plaster of Paris. This gives a model with the direction of the canal, and a metal plate is struck up to which a gold drainage tube is soldered. An enema syringe with an appropriate termination will enable sixteen ounces of fluid to pass through the antrum and out by the nasal opening in less than a minute. The other instructions have reference to the fitting of a vulcanite stopper into the tube, and the tendency of the opening to contract if the plate is not worn.

FOREIGN BODIES IN THE AIR PASSAGES.—Mr. Bernard Pitts in his address at the Royal College of Surgeons, points out that a small smooth body, especially if it be heavy, is more prone to descend into one of the bronchial tubes than an uneven light body, which is likely to remain in the trachea. When a foreign body is lodged in the trachea, there are usually signs of its presence on auscultation, and the recurrent attacks of dyspnœa as the body changes its position, are very characteristic. The tendency of a foreign body to pass into the right bronchus rather than the left, is generally explained by the fact that the septum at the bifurcation is to the left ot the middle line. Mr. Pitts thinks it is probable that foreign bodies find their way into the left bronchus much more often than is generally supposed. There appears to be a good deal of difference of opinion as to which bronchus has the preference.

THE PHYSIOLOGICAL ACTION OF OXYGEN.—Dr. J. L Kerr communicates to the *Lancet* the experiences of himself and a friend with regard to the inhalation of oxygen gas. They were both in perfect health, and therefore the observations must not necessarily be supposed to be the same as in a state of disease. The inhalations were taken by deep respirations, in a confined space, so as to breathe as little natural air as possible. There was no flushing of the face, or feeling of quickened vitality, or exhilaration. There was no quickened pulse-rate (and no rise in temperature was noticed. The only positive result observed was a distinct diminution in the frequency of respiration. The *besoin de respirer* was entirely abolished for the time being. The intervals between the respirations were greatly increased, and there was a feeling that there was no urgency to repeat the act of breathing.

FASHIONABLE QUACKERY.—Sir J. Crichton Browne, in his address at the Sheffield Medical School, in alluding to medical ethics, expressed the opinion that the present widespread patronage of quackery is a real humiliation to the medical profession. It is patronised in high places, but the very hotbeds of it are our fashionable watering places and health resorts. Sir James has been assured that our learned clerics are most addicted to it,—the skilled artisans the least—and he thinks these clerics should seriously reflect that in giving countenance to the nostrums of the empiric, they exhibit a credulity and superstition that must seriously impair their usefulness in their sacred calling with all thoughtful men.

Limited Liability M.Ds.—The Medical Defence Union seems to have discovered the existence of a new degree-granting body. Enquiries at Somerset House show the formation, not of a General Medical Council, but of a General Council of Safe Medicine. The objects for which this Company is established are to grant degrees, scholarships, and awards of merit in the magnetic and botanic system of safe medicine. The highest diploma the Council intend to confer, is the distinction of M.D. (Bc.), which shall signify the rank of Doctor of botanic medicine, in contradistinction to surgery, and the practices of allopathic and homœopathic schools of medicine. All those of the botanic profession of good moral character, who can produce reliable evidence of qualification, may hope to attain this distinction, which is however, safe-guarded "at the discretion of the Council." We have not seen a list of proposed fees, but we expect that these, if demanded, may prove an additional barrier to the crowd.

The Treatment of Stomatitis.—Chlorate of Potash is perhaps the favourite remedy employed in the routine treatment of stomatis, but Aufrecht in a therapeutic communication published on the Continent, recommends the administration of borax. He points out that the condition easily extends to the œsophagus and stomach in elderly and debilitated patients, causing dysphagia and consequent exhaustion from want of food. A three per cent. solution of biborate of soda is recommended for all such cases, a tablespoonful being taken every two hours, or even hourly, until the complete subsidence of the symptoms, the time occupied being one to two days. No unpleasant symptoms have been noticed. The author was induced to try this remedy some years ago, in two cases of typhoid fever, in which stomatitis was an early symptom, and where he wished to administer some agent which in itself should be harmless.

Abstracts of British & Foreign Journals.

Abstracts of Papers read at the Chicago Dental Congress.

ON CONGENITAL DEFECTS OF THE ENAMEL.

By Dr. OTTO ZSIGMONDY, of Vienna.

That striking anomaly in enamel-development known as "erosion" or "atrophy" occurs quite frequently. In teeth so affected the coating of enamel is unequally distributed. In the lowest grades of the affection, superficial pits of greater or less depth are found at isolated points in the otherwise apparently normal enamel. These pits may be isolated, or they may occur in rows. When the pits are confluent, furrows are developed which may embrace the crown like a ring. At times several of such furrows are found arrayed in series one above the other (furrows or wavy enamel). In other cases the enamel appears as if sown with small pits (honey-combed teeth of the English.) In still other cases the enamel seems to be entirely absent at certain points, and the dentine itself comes to the surface (called *erosion en echancrure* and *erosion en nappe* by French writers if the defect affects the free edge of the cutting surface or the front teeth to a greater or less extent.) The layer of enamel lining the pits possesses a rough uneven surface, a more or less yellowish or brownish colour, and lacks the proper polish and normal transparency, while the enamel in the immediate neighbourhood of the spots has all the characteristics of the perfect tissue. In those teeth in which the dentine is exposed or covered by a thin layer of enamel only, the enamel of the normal portion of the tooth stands out in the form of an annular swelling, a circumstance which has influenced certain authors to speak of the thickening of the enamel at those points. But, as can readily be seen in sections of such teeth, a true increase in the thickness of the layer of enamel above the normal never occurs. While the surface of the enamel is seen on cross sections to be interrupted, dipping into the pits and furrows, the margin of the dentine seems unchanged to the naked eye. Thus portions of different thickness are found in the layer of enamel. Spots entirely devoid of enamel are found but very rarely.

Spots entirely deprived of enamel, as a rule, soon succumb to caries, especially as the dentine of such teeth possesses a faulty structure conducive to the progress of the affection at those points where no enamel is present. It is characteristic of the defects in question that they are always symmetrical, so that corresponding teeth in the upper and lower jaws on both sides are similarly affected. The defects occur in the teeth whose development corresponds to the same period of time, and in the teeth they are limited to such portions as correspond in degree of development. The situation of the defects and their distance from the lateral surface of the crown accordingly vary in the different orders of the teeth. At times, if the interference with the development occurred at a very early period and no interruption in normal development took place later, it is only the first four molars, the first of the permanent teeth to harden, which show signs of abnormality. The defects are then found at the apices of the cusps only, which in consequence seem as if worn down. If the interruption of normal development occurs at a later period, when the formation of the enamel of the cusps of the first molars is further advanced, these teeth show the defect more in the direction of the root. In this case, beside the first molars, the central incisors likewise show defects in the enamel of the teeth which come next in point of time of calcification.

If the disturbance be repeated once or oftener, a corresponding series of furrows or pits will be found in the enamel of the teeth which were in process of calcification at the time of interruption of the development. If a furrow be found in the first molar near the edge, an analogous defect will appear halfway up on the crown of the central incisor. The cuspid will show the defect nearer the point of the cusp, while the teeth which undergo calcification later will be free from defect. The lateral incisor of the upper jaw, it should be remarked, differs from the corresponding tooth of the lower jaw, where its calcification follows that of the central incisor of the lower jaw and precedes that of the cuspid. Calcification in the upper jaw proceeds as follows :—1. The central incisor. 2. Cuspid. 3. Lateral incisor. This noteworthy circumstance, as yet inadequately studied, determines why we find the lateral incisor developed almost normally, while defects are apparent in the enamel of other teeth of the upper jaw. I shall not stop to consider these phenomena more at length at present ; the necessary data will shortly be given in a publication by my friend G. Cunningham, of Cambridge, England. The first molar is but rarely the seat of typical defects, the second molar still more rarely, and no instance of such defect has ever been observed in the last molars. Certain writers maintain that the milk teeth never exhibit typical defects. This, however, is a mistake. Temporary teeth are occasionally observed which resemble permanent cuspids and molars in defects of the enamel, and whose internal structure also shows the discontinuous lines which are characteristic of the teeth in question.

The question of the etiology of these deformities has often formed the subject of lively discussion. Seeing that the anomaly is hardly ever limited to a single tooth, as would be the case if the cause were purely local, but involves in the majority of cases the entire denture, this circumstance compels us to seek for the cause of the anomaly in general diseases of the organism whose effect as regards the other tissues of the body has vanished, while its influence has become permanent in the teeth.

Rachitis, scrofulosis, syphilis, the exanthemata, convulsions, meningitis, grave attacks of suffocation as, for example, from whooping-cough early in life, have been the alleged causes of the disturbances to the normal development of the teeth in their follicles. In view of the literature dealing with the subject, it is rather astonishing that the microscopic examinations of teeth so affected should have been almost entirely neglected, as this must form the basis for the solution of the question of the cause of the deformities. A point of capital importance is the evidence that the disturbance in development can also be observed in the dentine. The latter is not uniformly calcified in all its parts. We observe in sections of the same at points corresponding to the fundamental strata, well-marked lines which consist of interglobular spaces arranged in rows. These lines are sections of strata in which incomplete calcification has taken place.

The few data contained in the literature bearing on the structure of teeth with defective enamel are presented by C. Wedl, R. Baume, A. Walkhoff, and Charles S. Tomes. We are indebted to Frank Abbott ("Congenital Defects in Enamel,") for more extensive data on the structure of imperfectly developed enamel. The enamel-prisms are characterized according to this author by their wavy form, and are interrupted by delicately marked concentric striations. Penetrating the enamel at varying heights are seen numerous pear-shaped prolongations of the dentinal canaliculi, some extending nearly to the surface; these spaces contain protoplasm, and are stained a deep violet colour by chloride of gold. At several points layers of enamel with granular pigment are seen, where the enamel has not been thoroughly calcified. In one case Abbott observed an anomalous outgrowth of enamel upon the normal enamel. In another case an originally deficient enamel was found on which was deposited a normal one.

The question whether the enamel formed coincidently with the interglobular spaces in the lamina of the dentine may not also show traces of interruption to the normal development, finds no answer in the literature of the subject. Researches undertaken with this object have shown that an analogy between the lines of the dentine and the tissue of the enamel really exists.

Longitudinal section of a tooth affected with the simplest form of defect in the enamel, a furrow enveloping the crown, shows that the layer of enamel in the situation of the defect becomes gradually but progressively thinner in a direction from the apex of the crown to the root, until it reaches the deepest point of the depression, where the enamel becomes reduced to an insignificant layer varying in amount in different cases. The enamel rapidly regains its normal thickness from the deepest point of the depression in the direction of the root. The external boundary line of the enamel gradually approaches the surface of the dentine, whence it suddenly turns sharply outwards. If the section be sufficiently thin we observe a delicate but well-marked line, broken here and there, which traverses the whole extent of the enamel as far as the surface of the dentine, and in direct continuation of the first portion of the line limiting the defect and running in the same direction. This line makes an angle of fifteen to thirty degrees with the surface of the dentine. Its direction is thus as a whole the same as that of the brownish parallel bands of Retzius, which frequently occur in considerable numbers in the adjacent enamel. In cross-sections we see the line running parallel to the surface of the dentine and surrounding the entire crown of the tooth. The position of the line is therefore such that it is to be regarded as the section of a plane which divides the portion of enamel first from that deposited subsequently. It is probably correct to assume that it marks the limit of calcifiation of that portion of the enamel deposited at the time when the cause of disturbance of development made itself felt. If a section of a normally developing tooth be examined and the lines of demarcation between the latest deposit of enamel observed, it will be found that the layer of enamel reaches its greatest thickness at the free extremity, at the cutting-edge, or at the summit of the crown-points where calcification commences, and becomes gradually attenuated toward the roots.

The enamel prisms corresponding to the first portion deposited are already developed to a considerable extent as regards length, while the prisms of the remaining part are not so far advanced, and in that portion still farther distant from apex of the crown calcifications were observed to have only begun in the prisms. The enamel cells in the region of transition between the internal and external epithelium of the enamel have at this period not yet begun the formation of enamel. If the disturbance to the nutrition of the enamel occurs at this time, those cells of the enamel which have produced the prisms already calcified to a considerable extent are destroyed, hence the further development of the prisms becomes impossible. Those prisms belonging to the enamel situated nearer the crown of the tooth not being developed to the same extent, while suffering some interruption in development, nevertheless continue to progress after the disturbing influence has ceased to make itself felt, and may in many cases attain their normal size. The prisms in the region of the neck of the tooth in which calcification has not yet begun at the time of activity of the disturbance, of course suffer no interruption to development.

The line of interruption above described is always found in all forms of defective enamel. When the surface of the crown shows two or more furrows, the layer of enamel is seen on longitudinal section to be separable, with a corresponding number of strata, by lines extending from the furrows to the surface of the dentine. In those cases, also, where the defect consists of only a pit-like depression, we find the line of interruption on longitudinal section. It is exactly like those cases where the crown is embraced by a furrow on cross-section ; it is noticed that the line stretches from the bottom of the pit on both sides and surrounds the entire crown.

I cannot leave the subject without making a few remarks on the nomenclature which has been used to describe the defects under consideration. Terms which are appropriate for a great many cases, such as "wavy enamel," "honeycombed teeth," "furrowed teeth," and similar expressions, are not suitable in every case. The descriptive appellations "syphilitic" or "rachitic" teeth are to be rejected, because it is doubtful whether the diseases are the real cause of the defects, and if they are a cause they can only be so in a small proportion of cases. The term "atrophy" is likewise incorrect. The expression "erosion" is no less to be rejected. Erosion signifies loss of substance by mechanical force. The term erosion is properly applied to the notch-like grooves found on the neck of teeth, and which have been produced by the use of gritty tooth-powders, etc. I shall take the liberty of offering the following: Where individual organs are defectively developed because of external or internal noxæ, pathological anatomists are wont to employ the term hypoplasia to express that condition. We may accordingly speak of a hypoplasia of the enamel.

May I be permitted to express the hope that this term may soon find a place in the literature of the subject.

The Dental Cosmos.

ENGLISH TUBE TEETH: THEIR USE IN PLATE, CROWN, AND BRIDGE WORK.

By John Girdwood, L.D.S. Edin., D.D.S., Edinburgh.

The absence of a detailed description of the method of using tube teeth from any of the standard American works on operative or mechanical dentistry, has long been a subject of surprise to me. It still puzzles many of the leading dentists in Europe, and particularly in England, where tube teeth are still largely used, and found, where judiciously employed, superior to flat teeth, to know why the system universally practised here before the introduction of vulcanite, should have failed to attract any notice in America.

The English tube tooth differs from the flat favourite in one essential, viz., that its attachment to the piece to which it is adjusted is affected by means of a central tube (running through the body of the tooth), and into it a pin or post is introduced.

Before proceeding further, it may here be well to set out a few of the advantages claimed for tube over flat teeth.

First. Although adaptable in any situation on both jaws, they are specially superior as masticators. They are much stronger than their flat rivals. The tube tooth is supported over its whole lower surface, and the greatest strain in occlusion falls mostly in a vertical direction, upon the crown, whereas in a flat tooth the impact of the bite is even more evenly distributed.

Second. They allow of easy removal for repair.

Third. In soldering the backings of flat teeth to the plate, the danger of warpage is great. By the use of tube teeth this risk is entirely removed.

Fourth. They are more adaptable, a very long tooth can be cut down to any length, and, the body being of the same texture throughout, can be ground and polished perfectly.

Fifth. They can be used for plate, crown, and bridge-work, and in some cases in combination with vulcanite. From their ease of adaptability, a small stock of these teeth goes a long way. Hence they are cheaper.

Sixth. Being a more faithful reproduction of the teeth they replace, they feel more comfortable to the tongue, and are less bulky.

Seventh. They are more easily kept clean, because backings are done away with, and better supports substituted, which being surrounded by porcelain are out of the reach of any impurity.

For crown and bridge-work they have all the advantages already enumerated, and,in addition,they can be more perfectly and directly fitted to the root than any other form of porcelain crown. They retain when mounted for wear in the mouth, their translucency and natural appearance, qualities so often destroyed by the gold backing. There seems to me, however, to be one defect in the tube-incisors and cuspids as at present manufactured. In these the base is frequently too small antero-posteriorly, and consequently in many cases it is impossible with them to cover the root completely. Moreover, the tube is very often too near the front, thus destroying the axis of the crown with its root. The bicuspids and molars, however, are free from any such fault, and are pre-eminently adapted for crown-work. The application of tube teeth requires the use of a special set of simple hand tools which had best be described here.

A counter-sinker for clearing away the burr which forms upon the end of the tube when ground, and for slightly enlarging the orifice of the tube at its base. *A tube file* used to remove the *debris* from the tube after grinding. *A marker.* This is a piece of straight round wire which should fit the tubes easily, but not loosely, and have one end filed almost to a central point.

A pair of flat-pointed pliers with a longitudinal groove in them for holding the pin while it is inserted in its socket in the plate. A sharp-pointed graver. A length of gold pin-wire. A pot of paint, made by mixing olive oil and vermilion.

Their respective uses will be best described in an explanation of the method of mounting the teeth for which they are required. For this purpose we shall take, by way of illustration, a partial gold upper, where the lateral incisor and cuspid on the right side and all the grinding teeth on both sides, except the second right upper molar, are absent. Having struck and fitted the plate in the ordinary way, and fitted the clasp, a tube tooth is now selected for each side. Care must be taken that the teeth chosen shall be longer than is apparently necessary, so that some tooth-substance may be to spare in fitting to the plate and bite. They are now roughly fitted in the positions they will occupy. The counter-sinker removes the burr from the platinum tube at its ground end, and the tube file clears out all *debris* from end to end. Having seen that the tube is clean, replace the teeth on the plate, and fasten them in their desired positions with hard wax. Now pass the marking wire *tipped with vermilion paint* down each tube till it touches the plate, where it will leave a mark showing the place at which the holes are to be drilled to receive the pins. Remove the teeth from the plate, taking care not to injure the colour-mark. This undisturbed, take the sharp-pointed graver and make a slight pit for the drill; do not here take the plate from the model, but proceed to drill the holes for the pins, being heedful to keep the drill in every respect at the same angle as was made by the marker with the plate. By means of a broach the holes should be enlarged till they are just a little too small to receive the pin wire full thickness; the rough edge or burr left by the drill must be removed by file and graver, and the hole slightly countersunk on both sides. A suitable length of gold pin-wire should now be cut, and the end which is to fit the socket in the plate should be slightly tapered, so as to fit tightly and project a little way through on the palatal surface. A slight groove may with advantage be made longitudinally on the tapered end of the wire, for it assists the solder to run more readily from the palatal to the lingual surface. The tapered end of the pin and the pin-hole are then touched with borax, and the wire fixed firmly in place by means of the pliers, attention being paid to its direction. The tooth is next tried on, and having ascertained that this particular point is correct, we proceed to solder the pins, drawing the solder through from side to side. It is not necessary to invest the plate for this purpose, for the tightness of the pin in its socket will support it sufficiently. In soldering, it is of the utmost importance that the smallest possible quantity of solder be used. When the plate has cooled, the flux is removed by boiling in pickle. From the palatal surface cut off the projecting end of the pin, and smooth it down with corundum wheel and graver till it is level with the plate. Now replace the plate on the model, and file down the pins till they accurately fit the bite. Place the teeth on the pins, and if the latter should have tilted in soldering, it will be at once seen, and may be corrected by grasping the pin close to the plate and bending as required.

Now comes the fine fitting of the teeth, done best with small wheels. Paint the plate where the tooth will touch it, and press the latter gently to place ; it does not fit ; remove it, and a small red mark will show where it is too long ; grind off here, and having used counter-sinker and tube file, try the tooth on its pin again, and continue the process of alternate trying on and grinding till a perfect fit is obtained. Now grind the coronal surfaces of the teeth to suit the occlusion of the bite, using the vermilion paint freely. Next set the cuspid and first bicuspid on the right side, and these finished, the first bicuspid on each side serving as a guide, the pins for the remaining teeth may be inserted at one soldering.

The teeth are then polished and the coronal ends of the pins are finished to show a rounded end, or ground to the bite according to the requirements of the case. This done, the plate is finished in the usual manner. Previous to fixing the teeth, a few shallow cuts are made in each pin with a fine file. When the teeth have been properly cleaned from all traces of oil (which can be best done by boiling them for a few minutes in a strong solution of soda) their tubes are dried by cotton wound round a broach, and their interiors roughened by a clean tube file. The teeth are fixed with sulphur. This material is melted in a small porcelain Berlin cup till it is quite liquid, and is kept in this condition and held by an assistant. The operator himself grasps the plate firmly with the pliers in the left hand, and heats the whole carefully over the lamp. This must be done gradually, and the flame ought not to play on the porcelain. In the right hand he takes a wire spatula, and dipping it in the molten sulphur, conveys it to the heated plate and teeth repeatedly, till a surplus begins to show itself. The sulphur runs by capillary attraction under the teeth and along their pins, and when the whole has cooled it sets hard and the teeth are immovable. The excess of sulphur may be removed with a fine-pointed knife, and the polishing of the plate makes it ready for the mouth.

This description of the method of fitting tube teeth applies in every particular to every case, be it partial or full, upper or lower.

Besides the ordinary tube teeth, single gum teeth of this kind are to be had, and, when judiciously used, they prove as satisfactory as flat-backs.

English Tube Crowns.—In America during recent years attention has occasionally been called to English tube teeth in crown work, although no details of their application have been given. This branch of practice, however, is common enough in England, although the usual method of fitting the tooth to a model, fixing pin and tooth together, and finally cementing them upon the root, is open to many objections.

An improvement made by my partner, Mr. John Stewart, L.D.S., of Edinburgh, is well worth a description. The method is as follows: The root is prepared in the usual manner. If part of it remain above the level of the gum, apply the rubber dam to one tooth on each side before excising, having first anæsthetised the gum by painting on a twenty per cent. solution of cocaine. If possible use a ligature in preference to a clamp for fixing the rubber, because the latter interferes with the bite when the pin comes to be adjusted. Push the rubber up as far as you can, for the reason that it is well to have the union of root and crown covered by the gum when the dam is taken off. Now drill the canal with a twist drill a shade larger than the diameter of the wire to be used as a post. If, as often happens in the first bicuspid, the canal be bifid, a piece of wire may be bent to fit into each canal, and to it the straight post should be soldered, or the straight pin may be "kneed" and an additional "leg" soldered to it. The post may be made of gold, platinum, or English dental alloy—the last I prefer. The post, where possible, should have a fine shallow thread cut on it, except where it emerges from the root to enter the crown. This part should not be impaired in strength even by a screw thread.

Having selected a suitable tooth, fit it roughly to the root. Place the pin in the root and try on the crown; if it be much out of line with the other teeth, this fault must be put right, by bending the pin or by reaming the canal in the direction necessary, or by a combination of both operations, Now try on the tooth and the pin once more; if everything is right, groove the walls of the canal with a wheel bur, mix the cement, and, placing a little in the canal and round the pin, force the latter to place with the pliers. While the cement is yet soft, take the crown and slightly oil its base; slip it on to the pin, and before the cement sets insure its right position. It had best be held in place till the cement has set. Now having taken off the crown, trim away the surplus cement from the face of the root. The face of the root may be cut out round the post, and filled with gold or amalgam, if thought desirable. Make the patient close his teeth, and grind the post till it is clear. Now fit the tooth on the root as you would to a plate, but instead of using vermilion paint for fine fitting, use a small disk of thinnest articulating paper and grind off where the tooth is marked by it till a perfect fit is obtained. Next grind to fit the bite margin, remove the excess of porcelain till the sides of root and crown are continuous, and polish. Previous to setting, hollow out the base of the crown, avoiding the edges; this provides for the presence of a body of cement between the root and the crown, as in the Logan and other crowns. Clean out the tube thoroughly and roughen its interior as in plate work, and fix it with cement, pressing it firmly to place with a Bonwill crown-setter. The head of the pin may be riveted with an engine burnisher, but do not omit to examine the bite before the patient leaves.

The shaping of the root is a matter of choice. The two which I have found best are the "Saddle" and the well-known "New Richmond" shapes. The crown to suit the latter is best fine-fitted by hand, with a three-sided corundum file.

Tube Crowns on Metallic Caps.—If for any reason it is considered advantageous to protect the surface of the root by means of a metallic cap and band, the rubber dam must be dispensed with. Trim the root, making the sides parallel, and after fitting a collar to it, leaving the gold a trifle high, prepare the canal and insert a post loosely. Next take a plaster impression and bite of the whole; the pin and band will either come away with it, or, should they not do so, they can be easily replaced. Cast and open; fit a coin gold cap No. 30 thickness, and having soldered it to the band, through it drill or punch a hole for the pin; next place it on the model, insert the pin, and when needed, correct its direction by bending before soldering to the cap (the pin will be easily bent if nicked with a file, and as this weakness is repaired by the soldering, it in no way imperils the soundness of the post.)

Having boiled in pickle, replace the united pin, cap, and band on the model, and proceed to fit the crown. This done, cement it to cap and pin before inserting them in the mouth. This makes a strong and beautiful crown, and while it is applicable *a priori* to single-rooted teeth, it may be employed on some molars.

Tube Crowns on Living Teeth.—It is seldom that tube teeth can be used for this purpose, but two cases have lately been treated by me with great success. The first of these was a lower left first bicuspid which had a large amalgam filling, extending to the crown, on each of its approximal surfaces. The tooth was much discoloured, and by its presence the looks of a good set of teeth was spoiled. The patient objected to having the nerve drilled into and killed, the more when, on removing the discoloured crown, calcification of the pulp was discovered. It was decided to grind down the buccal aspect of the root nearly to the gum-margin, leaving the lingual side considerably higher. A cap and band were made to fit the root tightly and pass a short distance under the gum; a pin was soldered to this, a tube tooth adjusted to it and the bite, and the whole cemented on the living root. This device has been worn for two years, and bids fair to last twenty. The buccal side of the twenty-two carat gold band is almost covered by the gum, and what of it is seen looks like a tiny cervical filling. The second case thus treated does not differ essentially from this one.

English Tube Teeth in Bridge-work.—All the points of special worth given at the beginning of this paper are emphasized when tube teeth are used in bridge-work. One of the great obstacles to making a denture of this kind a success, is the difficulty met with in hiding the gold when the patient laughs. By the use of English tube teeth this is easily accomplished. For fixed bridges replacing the front teeth they are less suitable, because of the difficulty found in securing proper self-cleansing space. A case where the cuspids are past filling, and the molars still stand, will serve to explain the manner of constructing a large removable plate bridge with tube teeth. The crowns of the cuspids are to be cut level with the gum and the roots prepared after the usual fashion, the canals being drilled to receive a gold or platinum tube, which should be as long as possible, and sufficiently wide to accommodate a No. 13 post of hard gold. The molars are next trimmed to receive gold crowns, and a considerable notch is cut in the crown and anterior approximal surface of each. This notch (the object of which will be presently explained) should not extend on the coronal surface more than half way back, nor on the anterior aspect more than half-way from the crown to the gum. Tubes are then placed in the roots of the cuspids and allowed to project about three-eighths of an inch. An impression of the mouth is next taken in plaster, in which the tubes will come away, and it is cast and opened as usual. The plaster teeth and roots are now trimmed, so that the cuspid caps and molar crowns when made will pass a little way beneath the gum-margin. The pattern of cap and band for the cuspid is the "Richmond," and care should be taken that each is made level with the gum on the labial side. Hard gold or platinum tubes are next soldered to them in lieu of the ordinary posts of single "Richmond" crowns. The fixing of these with cement in their proper positions, and the operation of sealing the apical ends with gold or amalgam, complete the preparation of the roots. They are then ready to receive their posts. A Melotte die of each molar is next taken, and a gold collar made to fit it. This collar is notched on its anterior surface to suit the corresponding depression on the same surface of the natural tooth; the band is put on the Melotte cast, and a piece of No. 30 pure gold is placed over the crown and burnished to fit its upper surface and the floor of the notch referred to. When this is soldered to the collar, it gives an all gold-crown without cusps. A pure gold cap is next struck up and filled in with coin gold; it is ground level on its under surface, and is in turn notched at the same part as the gold crown already made. Having adjusted it to the latter, solder together, and you have an ordinary all-gold crown, plus the recess on the crown and anterior surface.

These crowns are cemented upon their respective teeth. Posts with bent ends are now placed in the cuspid tubes and allowed to project from them about three-eighths of an inch or more. A plaster impression of the whole is now to be taken; the pins will come away in it if the direction of the cuspid tubes has been carefully considered. (Before casting the impression, slip a small piece of metal tubing of such a size as will exactly fit the posts, over each; this will prevent any alteration in their direction when they have to be withdrawn and replaced in their sockets during the making of the bridge.)

Having cast, opened, and hardened the model, proceed to make the clasps for the fixed molar crowns, as follows: First take a Melotte die of each tooth and cut a pattern, being careful to leave a portion of it high enough above the level of the tooth to permit of its being bent down and accurately fitted into the notch. The clasp is next fitted to the tooth, and the high portion is thinned down with a file and punched till it fits into the depression as just indicated. It is now strengthened and contoured to the normal shape of the crown by the addition of pieces of hard gold soldered together with 21-carat solder. This forms a strong partial cap or spur, which bearing on the gold crown, prevents the bridge's settling too hard upon the gum. It is better to make the band and spur from one piece of metal, than to solder the spur to the band when fitted, for by the former way the continuity of the metal is unbroken. The clasp must be prolonged posteriorly to grasp the distal surface of the crown in order that any tendency on the part of the tooth to backward movement, by pressure on the spur (which will thus act as an inclined plane), may be prevented.

Now proceed with the swaging of the plate, which is made of two thicknesses of metal. Make the first one No. 24 gauge and about five-eighths of an inch all around. It must be struck up sharply and made to cover the cuspid caps. Next take a piece of plate, No. 26 gauge, and a trifle narrower than the first, and strike it over the latter, when fitted, solder the two together with 21-carat solder, and trim to shape the thick single plate produced. After having seen that the plate fits, drill it through opposite each cuspid tube to receive the posts, which are introduced into the tubes and allowed to project through the drill holes on the lingual surface. Now adjust the clasps, and place a little plaster round them and the cuspid posts. When it has hardened, remove the various parts from the model, stick them in their respective places, invest, and solder with 20 carat. When bands and pins have been soldered, try the bridge in the mouth and take the bite.

Select suitable tube teeth, and fit them as in ordinary plate-work. If the cuspid tube tooth-posts be thicker than the size of pin wire, they are to be reduced by the file to suit the porcelain teeth. Modification of this method can be used in construction of any removable tube-tooth bridge. The point to be most noted is the treatment of the molars, a plan which can be adapted to suit any of the posterior teeth. It most surely prevents the "settling" of the denture and the tendency to movement on the part of the natural teeth.

Fixed Bridge-Work—Fixed bridge-work offers but a limited scope to English Tube teeth, for they can as a rule be used as substitutes for the masticating teeth only, for reasons which render useless the adaptation of Logan, Bonwill, and other all-porcelain crowns to like purposes. The idea must not be formed, however, that tube teeth can never be used here. In point of fact, they can, but on account of the shape of a front tooth which necessitates a short and weak lingual surface, often to be further destroyed to accommodate the bite, it has always seemed to me inadvisable to use them except in a few exceptional cases, where the bite of the lower teeth strikes abnormally far in. Here they may safely be applied. The kind of case in which a fixed bridge with English tube teeth answers adimrably, is one where a gap in the dental arch extends from the wisdom tooth to the first bicuspid. The first bicuspid is banded and capped, and a pin (which acts as post both to the root and tube crown) is soldered through it. A gold crown is fitted to the wisdom tooth, and a strong oval-shaped 22 carat gold bar is made which will connect the crown and cap and ultimately carry the teeth. This bar ought not to rest on the alveolar ridge, but must be about one-sixteenth of an inch from it, and its angle with the alveolar border ought to be such a slope downward from the lingual to the labial side as will secure a perfect self-cleansing space. The anterior end of the bar must now be soldered, not only to the bicuspid cap, but also to the base of the post itself, so that the strain may be borne by both. So far, then, the bar and bicuspid cap are in one piece, the molar crown remaining unattached. Place these in their relative positions in the mouth; do any adjusting that may be necessary between the molar crown and the posterior end of the bar; take them off with plaster as just described in this operation in plate bridge, and solder. A bite must now be taken, and the teeth set up on the bar in the usual way, being fitted to it and allowed to overhang its buccal edge. When the teeth have been cemented to place with sulphur, the bridge had best be fixed temporarily in the mouth till it has proved satisfactory when it may be fixed. A fixed bridge like this may be inserted on either side of either jaw, and modified to suit such exigencies as intermediate roots, etc.

A point of great moment to the tube worker is the alloys of gold for posts. In plate work these are made by English dentists about eighteen carats fine. This comparatively poor grade of metal is good enough for plate work, but in crown and bridge work something finer is required. For these the qualities most to be aimed at in alloying are toughness and non-liability to tarnish. Colour as indicating purity is of no importance. From experience the author recommends the use of English coin gold alloyed with from 1¾ to 2 dwt. of platinum to the ounce, for *all pins, posts, plates, and bars.* This alloy is so infusible as to admit of soldering with coin gold twenty-two carats fine.

The use of sulphur as an agent for fixing teeth on plates and bridges is strongly advocated. Excepting where it cannot (from its very nature) be employed, sulphur is far and away the best material. It will stand in mouths which are death to the very best cements, because none of the oral fluids destroy it. Again, when repairs have to be done, where cement has been the fixing medium, the teeth can only be removed with great force by pliers, obviously a very unsafe proceeding. Indeed if the pin and tube have been well roughened the teeth cannot be, in many cases, got off without fracturing them. By the use of the agent advised, all this trouble is prevented, for when the plate comes to be prepared you have only to heat it carefully and gradually till the sulphur melts, when the teeth may be easily lifted from their pins, and refixed when the repair is effected.

It may be objected by some hypercritical individual that the appearance of the pins on the coronal surface of tube teeth seriously affects their value prosthetically. This, if objected to, may be overcome very easily. Having cut as much off the pin as you think fit, without impairing its function as a support to the tooth, take a white glass or porcelain rod of proper size, and insert a piece of it in the tube over the pin. This ought to be done before the teeth are finally fixed, so that the section of glass or porcelain will be firmly held by the sulphur. When finished, the most critical observer will hardly detect any break in the colour of the crowns if the inlays have been well matched.

To dentist and to patient the tube tooth yields such results as cannot be got from any other substitute. What more can an operator wish, when he has presented to him for use a tooth, differing essentially from the natural one in but one respect—that it does not live? What more does the patient demand than that having his dental apparatus restored as far as utility is concerned, he is at liberty to laugh and chat to his heart's content, without betraying the fact that he owes his perfect comfort, not to nature, but to art? It is no exaggeration to say that in the use of the tube tooth such a happy state of things is realized. It is my opinion, formed on long experience, that, were these teeth to once gain a footing in bridge-work, they would immediately find favour with all men who devote themselves to that department of our profession. The methods available to the prosthetic dentist are neither so complete nor so many as to be above improvement, both intrinsically and numerically, and in the interest of advancement I confidently recommend to you the English tube tooth.

The Dental Cosmos.

BORACINE (TETRABORATE OF SODA.)

By M. **Denis**, of Paris.

In one of the last numbers of *L'Odontologie* there appeared a most interesting article, treating of the antiseptic properties of boro-borax.

For some time past I have used an identical process, and a similar substance called boracine. It is a salt, perfectly purified, resulting from the combination of equal parts of borax and boric acid. This tetraborate of soda is neither caustic, toxic or irritating, properties that often belong to antiseptics. Moreover it has the advantage of being tasteless and odourless, and of dissolving in the proportion of sixteen per cent. I have tested the value of these products, and these are the observations which I have made. First, I have employed it for the disinfection of the dentinal tubuli, and I must say that the results were very satisfactory. However, the results I have obtained have not permitted me to substitute it for the different antiseptics already known. I have also applied it in the treatment of the mucous membrane, in which case it has given me astonishing results.

Among the number of cases, there are two which are particularly interesting. The first one was upon a rheumatic subject, in the treatment of an abscess of the maxillary sinus, produced in consequence of the too prolonged retention of a first molar, which was diseased, having caused many consecutive accidents in connection with caries of the fourth degree. I extracted this tooth; and I treated the abscess, excluding all other antiseptics, and employed only boracine. The second day the suppuration had already begun to diminish, and stopped entirely at the fifth day. That happened three months ago, and my patient has not suffered since. His gums, without being completely healed up, have, however, some time since, regained the normal colour. This rapid result has been obtained by putting one coffee spoonful of pulverized boracine in the wound of the sinus, that I took special pains to rinse before performing the operation, with boracine water of sixteen per cent; the adding of the powder to the solution has the object of facilitating the absorption of the remedy by the mucus, and in a most direct way; consequently the most efficacious one. The first day I performed three dressings; the second, the third, and the fourth days, two dressings; the fifth day only one. Every trace of infection has disappeared, and I have often seen my client since that time, enough to convince me entirely that he was thoroughly cured.

The second case is that of a patient who, in consequence of a bad extraction of the left cuspid and of the superior incisor, had the anterior part of the maxilla broken in different places; his different teeth were affected with caries of the fourth degree, which caused many chronic abscesses in the alveolus border, and fistulæ in the gums. A month after the extraction of these teeth, the patient felt some deep and continuous aching, and the abscess, instead of diminishing was increasing every day. It was at that time that he came to consult me to relieve him of his pain. Having detected the presence of sequestra, I cauterized an opening of about one centimeter in width, at the position of the right incisor. In the middle of the principal mass, I was lucky enough to extract several deposits of some millimetres, and one measuring exactly a centimetre in width. As soon as I finished this operation, I rinsed it a number of times with boracine water of sixteen per cent.; then I saturated the wound, so to speak, with some pulverized boracine, and placed a strip of saturated gauze at the orifice, in order to prevent the closing of the cavity too quickly; a consequence which would not have permitted the ulterior evacuation of the pus, and which also might have prevented my seeing if anything had escaped my investigation. The next day I observed that the abscess had disappeared, and that there remained hardly any trace of suppuration. I performed the same dressing as the day before, without leaving the saturated string. The next day, everything was over. Eight days after, the gum had regained, if not entirely its primitive shape, at least its normal colour, and no complication has ensued since. This demonstrated, in the first case, collection of considerable pus, which was stopped the fifth day after beginning the treatment; in the other case, it was stopped the day after.

I think, therefore, it would be a good thing to generalize the employment, particularly for the buccal mucous membrane which interests us the most. In order to sustain such results, I could not do better than quote the names of Doctors Galezowski, Landolt, Hubert, La Grange, etc., all of whom now employ boracine in all their clinics with great satisfaction. As a daily antiseptic, its use is plainly indicated against putrefaction of food particles.

The Dental Cosmos.

A continuous circulating battery has lately been brought out by M. Serrin. It is a simple sulphate of copper battery with zinc and carbon electrodes, but with a syphon arrangement for keeping up a continuous circulation. Two vessels, from and two which the liquid flows, are reversed every morning. The battery has a low internal resistance, and is said to be constant and economical. *Invention.*

BANDING ROOTS.

The increased difficulty of setting a crown with a band has contributed to its unpopularity, as there is no convenient escape for the surplus cement, and the greater number of its points of bearing tends to produce rocking and a consequent lack of stability when set. A patient who had two crowns set by the same dentist, one with a band and one without, said he would not have another crown inserted with a band ; that the band crown was very painful to fit and adjust and it appeared to be somewhat loose, or at least produced continued slight irritation and had an uncomfortable feeling. This is not a scientific objection but it may be a practical one. The truth is that a banded crown is the best, granting that the work is perfectly done, and the principal reason why all roots are not banded is that an all porcelain crown very often makes a serviceable operation, and the inability of the operator to successfully make and adjust a banded crown as he knows it should be done.

Pacific Dental Journal.

COMBINATION FILLINGS.

By **Dwight M. Clapp**, Boston, Mass.

Some six or seven years ago the author began filling with amalgam and gold, uniting the gold with the fresh amalgam, and finishing the filling at one sitting, thereby securing the good qualities of each of these materials, and making a filling theoretically and practically destined to be of real value.

Now, why may a combination filling be better than one made of a single material? Because it enables us to use each kind of material in that portion of the cavity to which it is the best adapted. Few, probably, will deny that amalgam will preserve a tooth better at the cervical portion of an pproximal cavity in a molar, or that gold with its greater dge strength is better for the masticating surface. Again, it nables us to make tooth and filling of one mass, or nearly so, o to speak, the filling thus helping to support the tooth, nstead of being supported almost entirely by it. For instance, if a cement filling is placed in a cavity the cement adheres to the tooth and if the walls are frail it helps to strengthen them. Now, if when we have put some sticky cement into a cavity, while it is yet soft we press some amalgam into this sticky cement, we have an adhesion between tooth, cement and amalgam, and the whole makes a solid mass, much stronger than if the cavity were filled with material held in by pressure and the shape of the filling only.

It may be illustrated in this manner: Suppose we are to build a frieze for a bridge out of granite blocks, will it be stronger if the blocks are simply piled one on top of the other, or if each block is united with its neighbour by a layer of the best Portland cement? Therefore, by combining two, three and sometimes four different materials in one filling, more satisfactory results may often be obtained than by the use of a single material. Of all the filling materials we have, cement, probably, has the most good qualities. If is of good colour, is adhesive and is a good preserver of teeth, but it lacks the one most essential quality—durability.

Now if we can fill a considerable portion of large cavities with a material which is capable of taking the place analagous to that of Portland cement in the bridge frieze, and protect it with some other material or materials that have the quality of durability, we are, at last, doing much toward arriving at the ideal filling.

The Ohio Dental Journal.

DISINFECTANTS.

By Carrie M. Stewart, D.D.S.

The experiments given in this paper, were made for the purpose of ascertaining what agent, alone or combined, would best answer the requirements for a dental disinfectant; one which can be used in diseased conditions of the oral cavity, alveolar abscess, putrid pulp, etc., with especial reference to quickness of action, with the least possible irritation and greatest acceptability to the patient.

The germs used in experimentations were those often found in the mouth, the staphylcoccus pyogenes aureus and albus. The bacteria belonging to the cocci groups were selected because of the greater of resistance of this form of germ to destructive influences than those belonging to the bacilli or spirilli types.

The germs were grown in test tubes containing 5 c. c. of beef bouillon. To this 1 c.c. of the disinfectant was added. The exact amount of each was determined in order to be sure of the amount of dilution of the reagent used. and also because of the greater perfection of the drug's destructive action, it being subjected to a more severe test when tried upon the millions of micro-organisms growing in the bouillon, than if the bacteria had been introduced into the germicidal solution with a platinum wire, on dried threads or a few drops of the inoculated medium. Besides, in the number of germs and dilution of the agent, it more nearly approximates the condition found in the mouth.

The time used was fifteen minutes, gelatine plates being inoculated at the end of 1, 2, 3, 5, 10, 15 minutes respectively. This time is the same, as near as possible, as that used ordinarily in the employment of medicinal agents in the mouth. The loop of platinum wire used for inoculating the gelatine was very small, in order to avoid carrying over enough of the disinfectant to form an area of sterilized gelatine around the germs, and preventing their growth, give rise to the false impression that they were deprived of life before being carried over. The liquified gelatine was thoroughly shaken, after the introduction of the disinfected germs, for the same reason. The normal time for the development of bacteria which had not been acted upon by chemical agents, was usually about forty-eight hours with the temperature of the room between 25° and 30_{o} centigrade.

Heat, of course, is the most effective form of sterilization, and although it cannot be conveniently applied in the mouth, its effects upon the germs were proven, and found that in boiling water the staphylcoccus pyogenes aureus were destroyed in one minute. With steam heat at 100° the same results followed in the same length of time.

From seven to eight days was the time given for the development of the plates, as only the most resistant organisms survive the exposure to destructive agents, and the longer the time employed the greater number succumb, there being a "survival of the fittest" here as elsewhere in Nature's economy. Those which finally develop require more time for the process than would be necessary under the natural conditions.

Bichloride of mercury, 1 to 2,000, with the pyogenes aureus, bouillon culture seven days old. Development was prevented by one minute's exposure.

There has, however, been some dispute in regard to the high rank given $Hg\ Cl_2$, as a germicide, some claiming that although it retards the development of germs for an indefinite period of time, under favourable circumstances and the action of certain salts, the chemical combination formed between the albuminous capsule of the germ and the bichloride of mercury will be dissolved and development take place.

It is well known that an extremely small amount of this salt is at least antiseptic in character, and although this theory has not been satisfactorily proved as yet, neither has it been disproved, and on this account further experimentation with the salt was left until another time.

Oil of peppermint 1 c.c. to 5 c.c. of a bouillon culture of the aureus. Development of an innumerable number of colonies took place in every plate after a period of three days.

Permanganate of potassium, 1 per cent. solution, 1 to 5 of bouillon culture of aureus. Numerous development occurred after three days. In a two per cent. solution in the same proportions the same results were obtained in the same time. After a fifteen minutes exposure, the development in both the one per cent. and two per cent. solutions was somewhat retarded.

Permanganate of potassium four per cent., 1 to 5 of a bouillon culture of pyogenes albus. Development took place in all the plates after three days.

Permanganate of potassium, 1 to 5 of the concentrated solution, with the aureus. No development occurred in any plate.

Chloro-phenique, bouillon culture of albus, 1 to 5. No development occurred. This agent precipitates albumen and is irritating to the tissues.

Listerine, 1 to 5 of a bouillon culture of the albus. All plates were well developed after four days.

Saccharine prevented the development of the pyogenes aureus, in the usual proportions, after a one minute exposure.

The action of carbolic acid being so well known, no experimentations were made with this drug.

Some of the other products of coal tar distillation were next tried, the concentrated liquids coming from the German laboratories and the desired percentage made with distilled water. A two per cent. solution was employed.

Aseptol, a clear, slightly brown liquid, with a decidedly acid reaction, 1 cc. to 5 cc. of a bouillon culture of the aureus. After five days, great development took place in every plate but that of the two minutes' exposure, which presented no colonies. This irregularity may be accounted for by the fact that only feebly resistant germs happened to be transferred to the second plate, and destruction having been accomplished before the transference, there was no development; or, it may be, too much of the aseptol was carried over, although that is hardly likely as every means was employed to prevent this taking place.

Creolin, a very dark solution with a strong odour of tar, produced a pinkish white emulsion with water and alcohol. 1 to 5 cc. of a bouillon culture of the albus, prevented all development.

Creosol, a beautiful straw coloured liquid, neutral reaction and sharp biting taste, in the usual proportions, with the albus, prevented all development.

Chinolin, a golden brown liquid, producing an emulsion with water, 1 to 5 cc. of a bouillon culture of the albus. Development took place in the first three plates after seven days, the one minute plate being developed in five days. The agent appeared to be a germicide after a five minutes application.

Lysol, a dark brown syrupy liquid, in the concentrated state, produces a beautiful straw coloured solution in distilled water or alcohol, while water containing lime salts assumes a decidedly milky appearance by the addition of this agent. It possesses a characteristic odour which is not at all unpleasant, but rather agreeable. A one per cent. solution was found to be an antiseptic only, development appearing after three days on the first two plates and a day or two later on the others. From a two per cent. solution upwards, the agent is germicidal in its action in one minute. On the germs of saliva, no development took place in the plate treated with lysol, while eight colonies resulted in the plate of normal saliva. Lysol more nearly answers the definition of a disinfectant than any agent experimented with, as it is a prompt and effectual deodorizer, a good detergent and a prompt germicide; combining in one drug the qualities so essential for a dental disinfectant. When used on very sensitive surfaces, the weaker solutions should be used first, as irritation results from the immediate application of a five per cent. solution to such surfaces.

In addition to its prompt, beneficial action, lysol is not disagreeable to most patients, and seemingly uninjurious to the teeth.

There are disinfectants and disinfectants, and this paper presents a glimpse of a few out of hundreds. These few, however, have been thoroughly and carefully tried and the results given. The point now-a-days is to find something one is sure of and can rely upon. New discoveries are constantly being made and old remedies discarded, until it becomes quite a problem to the practitioner what to depend upon. Only yesterday, comparatively, iodoform was relied upon as one of the great mainstays of dentistry, but it has been forced to take a lower position in the scale of dental medicine, and its place will probably be filled, in the near future, by something far better.

It is useless to have a great number of remedies, the action of none of which we thoroughly understand, perhaps, but all being highly recommended they are supposed to be good in almost any emergency, and when the emergency arises the practitioner is at a loss just which one of his valuable medicaments to employ. It would be far better and save a great loss of time, energy and general dissatisfaction, if each one would thoroughly acquaint himself with a limited number of agents, satisfy himself in regard to their efficacy in certain conditions, and he will then have at hand something he can rely upon in time of need when everything else seems to be doubtful and uncertain. Of course this does not altogether prevent the trial of new remedies, but gives one a tried list to fall back upon when an urgent case is presented, which is much more satisfactory than uncertain experimentation all of the time. *Dental Register.*

SARCOMA OF LOWER JAW.

By Charles M'Burney, M.D.

The case that I show you is one of very great interest from several points of view. The patient is a young woman, twenty-two years of age, who came under my observation some three years ago, complaining of the existence of a considerable tumour on the lower jaw. She gave a history of having noticed some enlargement two years before, due, as she says, to a blow received there some twenty months previously.

The tumour, when I first saw it, was about as large as a pigeon's egg, rather elongated in form, occupying the region to the right of the symphysis and two inches backwards. The teeth are perfect and undislodged. The growth is very hard to the touch, somewhat nodulated, and there is no involvement of the mucous membrane, nor attachment to the soft parts over it. When I first saw the patient I said that I considered this growth was an osteo-sarcoma of the lower jaw. She remained away for a little while and came back for a second examination. On re-examination, owing to the outline and consistence of the tumour, which felt very much like a cartilaginous or bony growth, I came to the conclusion that it was an osteoma of a non-malignant character. I put the patient under ether, and made an incision along the lower jaw with a view of removing it, if it was an osteoma. On removal of the surface of the tumour I became suspicious of its character. It looked more like a sarcomatous growth than anything else; I had the tissue that was removed examined, closed the wound, and the report came from the laboratory that the growth was a small-celled sarcoma. The treatment of the case resolves itself into a complete extirpation of the disease itself and of the tissue involved, viz., the rest of the jaw on that side of the face. If the disease were treated by a simple removal of only the affected portion, there would be a liability to a recurrence in the remaining part. Moreover, leaving the ramus of the jaw behind will not prove of any value to the patient. The portion which is left will become tilted by the temporal muscle and external pterygoid, causing interference with the use of the other side of the jaw. What I propose to do is to completely extirpate the disease by the removal of one-half of the lower jaw. I want to call your attention particularly to the condition in which a patient is left, who has had one-half of the inferior maxilla removed. It is not a difficult operation and the indications are perfectly plain. If you look at your text-books you will find no reference made to this condition. The patient is spoken of as free from disease: but any of you who have seen such a patient after removal of the lower jaw, will notice the position of the face. The unopposed muscles of the opposite side throw the remaining portion of the jaw directly into the mouth, so that the patient has his mouth practically filled with the unremoved half of the jaw He is able to get along without trouble, if there is no recurrence, but he is a very pitiable object to look upon. I attempted some time ago to construct a mechanical device that would overcome this difficulty following the operation. It seemed to me that if the proper ingenuity could be brought to bear upon the subject, if the uninjured part of the lower jaw could be held in position till the wound healed, the difficulty spoken of could, to a large extent, be remedied. I therefore asked a dentist of this city to make such a contrivance for me. He succeeded in making an interdental splint which was put on the upper jaw and the lower half of the jaw that was left after the operation. This plan succeeded very well, indeed. The splint is a simple one of the same kind as has been used for holding together fragments of a broken jaw. It is made of rubber, by taking first a plaster cast of the patient's jaws, so that the spaces for the teeth may be accurately adapted to the splint, and then the splint is made on this plaster cast. The splint fits absolutely every way.

The operative technique in this case is a very simple one. I shall make an incision starting from the median line and running towards the angle of the jaw. This will be supplemented by a vertical one extending from the angle of the jaw upwards along the posterior border of the ramus as far as the middle of the lobe of the ear. I shall dissect the soft parts away from the outer surface of the bone and the muscles, etc., from the inner surface as far as the mucous membrane keeping well away from the tumour.

International Journal of Surgery.

Dental News.

POISONED BY TOOTHACHE-ESSENCE.

On Tuesday, September 5, an inquest was held at Cahir, touching the death of Charles A. D'Arcy, aged 3 years, the son of Mr. Morgan Michael D'Arcy, pharmaceutical chemist, of Tipperary and Cahir. The boy, who was a deaf mute, drank from a bottle of toothache-essence which his mother had in use. He then took the bottle to his mother, and as he made a mark across his mouth she examined it, and found his tongue was white. Mr. D'Arcy's assistant administered an emetic and ordered the child a hot bath. A dose of oil was also given him. Mr. Morgan M. D'Arcy said he made up the toothache essence contained in the phial. It was sold as Bradshaw's toothache essence, and the principal ingredients in it were carbolic acid and morphia. The bottle in question was not labelled, as it was made up for his wife, who sent for it; but all bottles containing the essence were labelled "Poison," and he never let one of them out of his establishment without that label being upon it. The deceased was in the habit of imitating others in what he saw them do, and seeing his mother using the bottle he imitated her. The jury found that death was the result of a misadventure, and no blame attached to anyone.

A LADY'S WISDOM TOOTH.

Mrs. James, a widow, living in Kent, went to a dentist named Cotterill, living in Grosvenor Square, and had a wisdom tooth extracted, for which 10s. 6d. was charged. The dentist, saw Mrs. James at Westminster, persuaded her to have a new plate, as she wore some false teeth then, and to have another tooth in the place of the one which had been extracted. She said the charge for the extraction should not have exceeded 2s., and for all that had been done three guineas was an ample charge. Besides, Mrs. James did not like the plate because, she says, "It shows I've got false teeth." His Honour gave judgment for the six guineas claimed by the dentist, with costs. He was not prepared to say that the charge was too much. Half a guinea was not an extravagant sum for a dentist in Grosvenor Square to charge for extracting a tooth

Daily Paper.

FIRE IN A LABORATORY.

A serious fire in the junior laboratory of the Michigan University dental college was recently narrowly averted by the opportune arrival of dispensing clerk, Henry Purfield. The fire was, however, quickly extinguished by Mr. Purfield. but not before it had consumed half a bench, burned a hole through the floor, and completely destroyed many laboratory instruments. The cause of the fire was a Bunsen burner, which had been left burning.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.

The Entrance Scholarship of the value of 120 guineas, has been awarded to Mr. Harold A. F. Fairbank; and that of the value of 60 guineas to Mr. Stanley W. R. Colyer.

VACANCY.

National Dental Hospital, Great Portland Street, W. The post of House Surgeon is vacant. Applications to be made on or before the 21st October to the Secretary.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291 Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

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INAUGURAL ADDRESS.*

By THOS. MURPHY, L.D.S.I.

Gentlemen,—Allow me to thank you very sincerely for the honour you have conferred upon me in electing me President of this Society.

When men of light and leading have occupied this position, all of them having more or less to do with the dental educational institutions of this city, you will agree with me that it is no small matter to undertake a position of this character; and I feel that there are many around me to-night, who would have filled the position better than I can possibly hope to do. But with your forbearance and the able assistance of the officers, I will do what I can to keep up that spirit of harmony and good-fellowship which I hope will always be a strong characteristic of the Manchester Odontological Society.

This is our eighth anniversary, and as time rolls on it becomes a little more difficult for your President to select a subject for the inaugural address which will interest the members.

From past Presidents we have had subjects of great interest brought before us, i.e., Dentistry as practised by the ancients; Mechanical Dentistry; the past, present, and future of Dentistry, etc. I think you will agree with me, that as a Society founded for the purpose of disseminating knowledge amongst its members, it has been a great success.

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*Delivered at the Manchester Odontological Society.

We have had papers of a high order both from our own members, and members of the medical profession, bearing on our speciality ; also mechanical and surgical demonstrations, which are always instructive and attract good attendances.

What a contrast to the time Mr. Campion described in his inaugural address, when every member of our profession thought himself cleverer than his neighbour across the way, and consequently all was enmity.

At the present day although we may agree to differ, we can shake hands and be united in one common brotherhood for the furtherance of professional knowledge.

Now, gentlemen, I wish to bring before you to-night a subject in connection with our art which has not received much attention either here or in other kindred societies ; this I will do as briefly as possible and with the idea that on some future occasion we may have a discussion on the subject.

It is a trite saying that an ounce of prevention is better than a pound of cure, and I ask in all seriousness, "Are we as dentists doing all we can to prevent the ever increasing ravages of decay in the teeth ?" I think I may go further and ask "Are we doing anything at all for the prevention of the disease ?" I know I am opening up a very wide field for discussion, but it is because I feel deeply on this subject that I have ventured to broach it. During the last 40 years medical and sanitary science has done a great deal in stamping out zymotic diseases. In surgery you have excision instead of amputation, skin grafting, bone grafting, etc. By these and various other means, disease in one form or another has been checked or annihilated.

With regard to our speciality we are getting more conservative year by year, bringing all the skill we have in trying to save before resorting to the extraction of a tooth. In doing this we simply stay the decay in that particular tooth for the time; we cannot say that we effect a cure; it is what is called in medicine a palliative treatment at best. I think this will be admitted when, according to good authorities, the average life of a gold filling is from 6 to 8 years.

Fillings in the end fail, then we Crown, Bar or Bridge; and lastly extraction follows. Then come artificial substitutes the patient often declaring that with these aids properly adapted his dental troubles are ended.

Let us now look at the causes at work in this wholesale destruction of these organs. You have Heredity; Small pox; scarlet fever; crowding; uncleanliness; bad feeding; insanitary dwelling; high pressure at school; worry of business: amongst cotton operatives, the high temperature of the mills, (averaging from 80 to 90° with a large percentage of moisture,) many with bad ventilation; syphilitic taint, etc. etc.

Although this is a formidable list, I have no doubt many of you could add to it, and I will add one more which I firmly believe to be the greatest sinner of all, viz:—Soft water, as supplied to the millions in this and other districts throughout the United Kingdom. I believe it to be the greatest factor in the destruction of the teeth. I do not mean by the word destruction that the water acts injuriously at all. It is the absence of lime in the water that is the cause of the mischief.

If it requires 89 per cent. of Phosphate of lime to form the enamel of a tooth, and there is not a particle of lime in the water, where, I would ask is the supply to come from. Not from the food, because that, now-a-days, is of such a character that it contains much less lime than formerly; tea, coffee, and white bread forming the general diet, whereas in the good old times oatmeal porridge and brown bread were the rule. I think the water you get in Manchester may be taken as a fair sample of what is supplied to other communities by the same system—"Gravitation." You use daily from 22 to 24 million gallons. Now when your reservoirs are full 18 millions of the 24 millions is surface water: rain water filtered, 6 millions only coming from springs, and in seasons such as we have had this year, your springs are dried up, therefore you are using rain water alone—excellent for domestic purposes but useless as a bone former.

In some parts of the Kingdom the inhabitants fortunately are supplied with water from the chalk or limestone strata, generally got by pumping. This is so in many parts of London, Southport, and other towns. I may say that "gravitation" is preferred because there is less expense in distributing the water.

I have had the opportunity of studying this subject for the last ten years, through having under my care at three institutions children varying in age from 3 to 16 years, and numbering from three to four hundred. Two of the Institutions take in children from Bolton alone. The other one takes them from all parts of the country, the majority being sent from London, and gathered from the lowest class, in fact gutter children. Some of these hardly knew what a bed or a meal was until entering one of these establishments, and yet their teeth are as a rule far superior in quality than the teeth of the children who have every care in this district. This goes to prove to some extent that my opinion has some point in it.

I have also had proof of my assertion in my own surgery. Being struck for some time with the superior quality of the teeth of two boys, aged 11 and 13 years, natives of Bolton, and being well within the range of our water supply, I was led to inquire closely as to diet, etc. The last question was "Do you use corporation water?" "No," was the answer, "our family have used water from the same well for the last hundred years, it is hard water, and of great purity." The father of these boys has excellent teeth, and it is on his side that the same water has been used for the fourth generation.

Whenever I find teeth of a superior quality, I make careful inquiries as to place of birth, whether the water is hard or otherwise, and as to the source it is supplied from. These inquiries have led me to the conclusion that water containing lime salts improves the quality of the teeth, and as a proof of this, persons removing to districts like this, from where hard water is used, lose their teeth sooner or later.

I have also observed that when a child is sent to school from this district early in life, to a limestone district the permanent teeth are a great improvement on the deciduous set.

Necessarily these observations only cover a very limited area, but I think if each of us would add his quota on the lines I have laid down, these remarks will not be in vain.

Now supposing I am right in my opinion that the absence of lime salts is the chief cause of the loss of teeth at the present time, can we as dental advisers suggest anything to our patients to prevent this destruction ? If the answer is in the negative, the disease must go on, and the time will come when men will not only be born without teeth, but remain without them all their lives. I hope you will not think this a haphazard assertion ; as a proof, I have myself seen a case where the first four deciduous molars were the only organs of mastication developed, and the man was twenty-six years of age, and of fine physique. I have no doubt many of you will have seen such cases.

The enamel organ of the tooth being formed at the second month of gestation, it naturally follows that the parent must have the necessary quantity of lime phosphate in the system at that time, if the offspring is to inherit good teeth. To prove that there is not this supply of lime salts, we have only to look at the mouths of females who have had families, and we find one, two, or three teeth lost for every child born, and we are often told that at the commencement of married life the mother's teeth were perfect. As we are only consulted when the mischief is done, if preventive measures are to be applied, we must do all we can to get medical men to take an interest in this subject; they come into closer relationship with their patients, and then advice given at the proper time would be highly valued.

In many cases we could give the advice through the medical attendant by writing or consultation, where we might not be able to give it direct.

In my own practice I recommend Hydrate of Lime for making lime water. One ounce will make one gallon, and a chemist in the town puts it up in ounce packages. The Hydrate is thrown into the water and allowed to settle, when the water is ready for use.

If in these somewhat disjointed remarks I have given you a little food for reflection, the time will not have been thrown away. Sooner or later this will become a burning question, and it will be for our younger brethren to grapple with it.

I trust that ere long the subject may be brought before us by some member, in order that the pros and cons of this important question may be thoroughly discussed.

I have condensed my remarks, knowing that we have a distinguished visitor from America with us this evening, who has kindly consented to give demonstrations on the making of seamless gold crowns, by an apparatus devised by himself and also a method of treating irregularities without the necessity of using plates.

In introducing Dr. Patrick to the members, I may say that he is well known in America as an excellent operator, an original and expert mechanician, an undoubted authority in scientific research with regard to our profession, and last, but not least, a past President of the Dental Department of the State University of Iowa.

If the founder of this Society—Dr. Shaw—had been with us to-night, he would have been delighted to have welcomed most heartily Dr. Patrick, as I know they have corresponded with each other on professional matters, for a considerable period, although personally unknown to each other. I have had the pleasure of seeing Dr. Patrick operate on several occasions, and can testify as to the excellence of his work.

Gentlemen,—In conclusion, I thank you for the attention with which you have listened to my remarks, and trust that the session upon which we have entered this evening, will be the most successful in the annals of the Society, that it will be fruitful in knowledge, valuable in experience, sound in polity, and ever increasing in vitality.

DRUGS AND PREPARATIONS USED IN THE SURGERY.*

By HENRY W. TICE.

Mr. Chairman and Gentlemen,—My subject this evening is on "Drugs and Preparations used in the Surgery."

About twenty years ago, comparatively few drugs were known in connection with the treatment of teeth ; Carbolic Acid, Creosote, Arsenic, Morphine, and Mastic, being the average stock drugs of the ordinary dentist: so the tremendous strides that have been made during that period must be apparent to you all. Even now, every dentist has his own peculiar fancies in regard to the most suitable germicides for asepticising cavities and root canals. One man will prefer Peroxide of Hydrogen, another, Perchloride of Mercury, and another, Eucalyptus and Iodoform.

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*A paper read to the Students' Society, National Dental Hospital London.

Germicides were scarcely dreamt of a few decades ago, capping being resorted to in nearly every case where there was an exposure ; but there are very few men at the present day who would not instantly apply a devitalizing agent, and clear away every possibility of future trouble.

Of course there are exceptions to every rule, and where a slight exposure has been accidentally made by an excavator or a bur, and the pulp is in a thoroughly healthy condition, a dome-shaped cap can be applied, previously dipped in creosote and tannin, with every possibility of its lasting just as long as though no exposure had been made.

Having just mentioned devitalizing agents, the first drug I will say a few words on will be Arsenic.

Arsenic (also called Arsenious Acid, Arsenious Anhydride and White Arsenic) is obtained by roasting Arsenical Ores and purifying by sublimation. It is hardly soluble in Water or Alcohol, being soluble in about 1 in 100 of cold water and 1 in 20 of boiling water.

Its chief use in dentistry is for destroying pulps.

According to Dr. Arkövy, the action of Arsenic on the tooth pulp produces Hyperœmia, which varies according to the quantity of the agent applied ; the blood vessels becoming dilated and having a tendency to thrombosis. It has a specific effect upon the blood corpuscles, combining with the hæmoglobin, but produces no coagulation of tissue. The connective fibres and odontoblasts undergo no change whatever, but the connective tissue cells increase in size. The axis cylinder of the nerve elements here and there disappear. The whole, or certain parts of the pulp, as well as the neighbouring dentine and cementum, assume a brownish red tinge. The arsenious acid is liable to permeate the dentine and cementum when thin, and also to be taken up in the collateral circulation, and produce periostitis; hence the necessity of not allowing this powerful and toxic agent to remain in *situ* longer than from 24 to 48 hours, and also of the entire extirpation of the pulp so destroyed. The larger the pulp (as in young teeth) the greater the liability to periostitis ensuing, and also, the younger the pulp, the shorter time should the drug be left in. In young children it is not advisable to leave it in longer than about six hours, whilst in adults, subjects of Chronic Inflammation, as long as 4 days may elapse, as these are very often difficult to devitalize. Neither should the escharotic be applied where there is acute inflammation of the pulp, but that condition should first be allayed by means of dilute Carbolic Acid, Oil of Cloves, Creosote, etc.

The application of about 1-20th of a grain of Arsenic is sufficient to destroy an ordinary pulp, but as it frequently causes pain when applied alone, various preparations have been made to obviate this trouble; the chief ingredient for relieving the pain being Acetate of Morphine, the proportion being about 1 part of Arsenic, 2 parts of Acetate of Morphine, and sufficient Creosote to form a thick paste, other drugs are also used such as Cocaine and Iodoform, either singly or together, as in the following recipe.

Arsenic gr. xc.
Cocaine Hydroch. gr. x
Iodoform gr. v
Ol. Cassia q.s. to form a stiff paste.

Another painless preparation is said to be made by putting a small quantity of arsenic in a bottle and pouring over it sufficient creosote to cover it; when you wish to use the paste, tip the bottle so as to reach the Arsenic, and apply directly to the pulp in the usual manner.

Should the Arsenic by any means be lodged or squeezed out of the cavity on to the gum, it may produce serious sloughing and periostitis, which may lead to necrosis. This may be treated by scraping away the injured tissue and applying Carbolic Acid.

Arsenic has also been used for sensitive dentine, but it has been discontinued owing to its liability to set up pulp irritation.

It is also, next to quinine, the most successful medicinal agent in the treatment of chronic neuralgia.

The next important drug of everyday use, is CARBOLIC ACID.

Carbolic Acid is also called phenic acid, phenol, and phenyl alcohol.

It is obtained from coal-tar oil by fractional distillation and purification.

The acidum carbolicum liquefactum, or liquefied carbolic acid, is the crystal carbolic acid liquefied by the addition of 10 per cent of water.

Its dental uses are—

For relieving toothache, whether arising from an exposed or nearly exposed pulp.

Also for obtunding sensitive dentine, acting by coagulating and sealing the contents at the ends of the dentinal tubes ; it will be found to have more effect by first mopping out the cavity with alcohol, and drying with hot air before applying the carbolic ; and by this method it will also show up better any traces of decomposed tissue that has not been removed. It is a good antiseptic, but it has been advised not to use it in cases of alveolar abscess, unless there be a fistulous opening, as it coagulates the albuminous ingredients of the pus, and prevents the withdrawal from the abscess sac. It is used in a dilute form as an antiseptic lotion in ulcerations of the mouth, also a mixture of 1 part acid and 12 parts of glycerine is recommended to be applied to the palate by means of a brush, to stimulate the mucous secretion where deficient, and thereby aid the suction of an upper Denture.

Should any of the strong carbolic by any means get on the lips or gums, when applying a dressing, etc., a little glycerine or vaseline would quickly stop its escharotic action.

Closely allied to carbolic acid comes CREOSOTE.

Creosote is a product of the distillation of wood tar, and has been used for the same purposes as carbolic acid, but the latter has almost entirely superseded it. It is chiefly used now in combination with tannin for capping an exposed pulp.

It is used for toothache, sensitive dentine, and is also said to allay the pain from an arsenical dressing, as in the formula I gave under that heading.

A great many people dislike it on account of its objectionable odour.

OIL OF CLOVES is an antiseptic, local anæsthetic and counter irritant.

It relieves toothache and obtunds sensitive dentine, and may be used mixed with soft osteo to flow over a sensitive pulp or dentine as a temporary Filling.

CHLORIDE OF ZINC is freely soluble in water, alcohol and ether.

It is very caustic and strongly antiseptic, and is used in dentistry for sensitive dentine, but produces a severe dull pain. This is said to be greatly relieved by first swabbing out the cavity with strong carbolic acid or alcohol. It is also used for cauterizing the part after removal of an epulis. A concentrated solution forms the liquid for oxychloride fillings. The powder consisting of oxide of zinc.

A mouth wash composed of 1 gr. of chloride of zinc to 1 oz of water is used where suppuration proceeds from inflamed gums.

Iodine is chiefly applied in dentistry in the form of a preparation or a compound. It is used as an application for inflamed tissues in the form of a tincture or liniment.

The Tincture of Iodine is useful for injection into cysts, as an injection through the pus tract in the treatment of alveolar abscess, and also as an application to the pockets about the teeth affected with pyorrhœa alveolaris. Iodine is also used in combination with aconite for periostitis, consisting of equal parts of tincture of aconite and tincture of iodine, or a stronger preparation may be made by using equal parts of liniment of iodine, and Fleming's tincture of aconite, (Fleming's being about five times the strength of the ordinary aconite).

The stain of iodine on the skin can be removed by applying an alkali, such as ammonia.

The chief compounds of iodine used in dentistry are:—iodoform, iodol, and aristol.

Iodoform is only slightly soluble in water and alcohol, but freely in chloroform, ether, and the fixed and volatile oils. It is greatly used in the treatment of dead teeth, chiefly in combination with eucalyptus oil. The great objection to this drug is its odour, although this may be temporarily masked by using it with either oil of cinnamon, volatile oil of camphor, balsam of Peru, or musk. Iodoform produces little or no irritation when applied to the human tissues, and is extensively used as an antiseptic dressing. It also acts as a kind of local anæsthetic, and for this purpose it is sometimes used with arsenic to lessen the pain of the latter when devitalizing a pulp, as in the following recipe:—

R Arsenic 2 parts.
Iodoform 1 part.
Creosote q. s. to make a paste.

Iodoform gauze is used for packing sinuses in antral cases.

Iodol is insoluble in water, but soluble in alcohol, ether and chloroform. It is employed for the same purposes as iodoform, but has not the unpleasant smell. Iodol varnish is useful for covering soft decomposed dentine, if advisable to leave in a cavity to prevent an exposure.

Iodol made into a paste with oxide of zinc and vaseline, or lanolin, is also used for filling root canals.

The other compound of iodine which has recently come into use, is

ARISTOL, a reddish brown powder, and containing about 46 per cent. of iodine. It also possesses the advantage of being odourless. It is insoluble in water and alcohol, but freely soluble in chloroform, ether, and the essential oils. It possesses antiseptic properties like iodoform and iodol, and is used for the same purposes. Also a solution of aristol in chloroform has been used as a substitute for mastic as a dressing or temporary filling; it is quite antiseptic, and after remaining in the mouth for a week or so, has no unpleasant odour or taste.

PERCHLORIDE OF MERCURY, also called bichloride of mercury, murcuric chloride, and corrosive sublimate, is obtained by subliming a mixture of chloride of sodium, and persulphate of mercury. It is soluble about one in twenty of water, and one in five of alcohol. It is a powerful antiseptic and germicide, and is extremely poisonous. It is employed in the form of solutions of various strengths either in alcohol or water, an equal quantity of chloride of ammonium being added to prevent decomposition. It is extensively used in the treatment of dead teeth, and of pyorrhœa alveolaris; for the latter it is sometimes used in solution of peroxide of hydrogen, 1 gr., to 1 oz.

PEROXIDE OF HYDROGEN is used for its antiseptic properties, and is said by some to be the strongest bactericide known, and for this purpose is used in the treatment of dead teeth, alveolar abscess, and pyorrhœa alveolaris. It is also used for bleaching teeth.

In the treatment of dead teeth it is said if pus be present it will cause violent effervescence, and will continue to do so until all the pus has been destroyed. Peroxide of Hydrogen is a very unstable compound, and should always be used as fresh as possible. It is also useless to leave it in a root for a dressing, as it rapidly decomposes, giving off its extra atom of oxygen to any decomposed matter it may come in contact with, leaving only H_2O (or water) remaining.

NITRATE OF SILVER is very soluble in water, and about one part in fifteen of spirit. It is a strong caustic, but its effects are limited to the area of application. It is used in inflammatory affections and ulcerations of the mouth in the form of solutions, the strength varying from 1 gr. to 1 oz. upwards.

Distilled water should always be used to dissolve it for solutions, for if ordinary tap water is used, it turns cloudy, mostly due to the precipitation of the chlorides contained in the water.

It is employed for sensitive dentine, using a saturated solution applied on cotton wool. This is recommended by some to be left in the cavity a few minutes, and then, if possible, to mop out the cavity, fill with gutta-percha, and let the patient return the following day.

The objection to nitrate of silver being used for this purpose is, that it discolours the teeth; but this is said to be removed by an application of a saturated solution of iodide of potassium used with a little powdered pumice and a stick.

Should the nitrate of silver by any means get on the mucous membrane, any injury it might do may be prevented by quickly applying a little common table salt.

COCAINE is an alkaloid preparation from the dried leaves of erythroxylin coca. It is readily soluble in alcohol, water, and glycerine. It has been extensively used in dentistry, but with varying results.

As an obtundent of sensitive dentine it is used by first drying out the cavity and placing therein a saturated solution on cotton wool, but to have any decided effect it must be left in for from ten to fifteen minutes.

For producing local anæsthesia previous to extracting a tooth, from half to one grain dissolved in ten minims of distilled water may be injected hypodermically, one half the quantity into the labial side, the other half into the lingual or palatine, as low down the root as possible in a slanting direction, and the space of ten minutes should elapse before operating. It has been recommended that it should *not* be administered on an empty stomach, and that a stimulant should have been taken half an hour previously.

To prevent the cocaine having any deleterious effects on the system, various formulæ have been recommended, but the following is one of the best:—

Cocaine Hydrocl	gr. xx.
Atropia Sulph.	gr. $\frac{1}{10}$
Ac. Carb. Cryst.	gr. x.
Chloral Hydras	gr. v.
Aq. Dest. ad.	℥1.

The atropia counteracts the toxic effects of the cocaine, and the carbolic acid and chloral *localize* the anæsthesia, and aid in the preservation of the solution.

TANNIC ACID is readily soluble in water, alcohol, and glycerine. It is the most powerful of vegetable astringents, uniting with the albuminous and connective tissues to form insoluble tannates, or otherwise "tanning" them; an action which if exerted on a dead body would convert it into leather. It also reduces the sensibility of the nerves.

It is a styptic and astringent, and used for spongy gums, sensitive dentine, for hæmorrhage after extraction, and combined with creasote for an exposed pulp, and also as an application to a pulp after it has been devitalized in order to remove it in its entirety.

In severe cases of hæmorrhage after extraction, it is advisable to plug the socket with tannic acid on cotton wool which has been moistened by water, and over this place a ball of cotton wool, sufficient to exert pressure when bitten on by the opposing jaw ; then keep the mouth closed by means of a four-tailed bandage for a few hours.

PERCHLORIDE OF IRON.—The Liquor Ferri Perchloridi, or solution of perchloride of iron is used as a styptic or hæmostatic, tonic and astringent.

In cases of hæmorrhage after tooth extraction, the patient should be directed to well rinse the mouth with cold water, then mop out the socket, removing every trace of clots, and place in a pledget of cotton wool impregnated with the iron, and over this, place another piece of cotton wool to form a good sized pad. The objection to the use of iron for hæmorrhage is that owing to its escharotic action, it destroys the tissues that it comes in contact with, and Tomes says " should the caustic fail to produce the contemplated effect, the difficulties of treatment are enhanced by the increased size of the bleeding surface."

Perchloride of iron is given internally for the neuralgia of anæmia.

MATICO LEAVES are used in dentistry as a hæmostatic, acting both chemically and mechanically.

For arresting hæmorrhage after extraction, the leaf should be thoroughly softened with hot water, cut into strips as wide as the vacant alveolus is deep, and rolled with the rough side outwards, so that the underside of the leaf goes next to the bleeding surface, this is then placed in the socket of the extracted tooth, with a few folds of lint placed over it, being held in position by closing the mouth.

In all cases of hæmorrhage after extraction, it is advisable to exert pressure on the part, and to keep the mouth closed by means of a bandage.

Alum is soluble about one in ten of cold water, more so in boiling water, and one in four of glycerine.

It is a styptic and astringent, and used as a mouth wash in ulcerative and tender gums, and as a remedy for sore throat, in the form of a gargle.

It is also useful as an astringent for the gums at any time, especially after extraction, and in doses of thirty grains frequently repeated, it relieves lead poisoning, by probably precipitating the soluble salts of lead.

Ammonia in the form of chloride of ammonium is used in equal parts with the salt in the solution of perchloride of mercury to prevent decomposition, part of the chloride of ammonium forming a double salt with the perchloride of mercury.

Chloride of ammonium is given internally for neuralgia in about twenty grain doses, and is also used in the treatment of periostitis.

Sal Volatile or Aromatic Spirit is used as a stimulant and restorative, the dose being half to one drachm in water. The strong solution of ammonia is useful for removing stains of tincture of iodine from the hands or serviettes, and also for removing the stains of nitrate of silver, by first covering the spots with tincture of iodine, (leaving it on a few minutes) and then applying strong solution of ammonia, and rubbing well.

Antipyrin is an alkaloidal product of the destructive distillation of coal tar. It is freely soluble in water, rectified spirit and chloroform, and is an anodyne and antipyretic. It is used in neuralgia in about ten to fifteen grain doses, given hourly for two or three hours. The maximum dose is thirty grains.

One ten grain dose is also useful for a headache brought about by a prolonged filling. Antipyrin has a lowering effect on the system, so when repeated doses are given, the patient should be watched.

Antifebrin has also been used for the same purposes, but given in half the above doses. It is said not to leave the depressant affect of antipyrin, but has a tendency in some cases to cause cyanosis.

Amyl Nitris, or nitrite of amyl, is principally used as a restorative in cases of defective breathing and syncope, and is usually administered by inhalation, the dose being two to five minims, or if administered internally the dose is half to one minim. The most convenient way of using it is in the form of a capsule containing the exact dose : this is crushed in a handkerchief and inhaled cautiously. It quickly produces flushing of the face, and causes the heart to beat rapidly and violently, and generally leaves the patient with a headache.

Gutta Percha is insoluble in water and alcohol, but almost entirely soluble in chloroform and oil of eucalyptus. It is used in the surgery for lining artificial dentures, and for making splints in cases of fracture of the jaw.

It is also used in combination with oxide of zinc, sulphide of zinc, and sulphite of lime, etc. for filling teeth, and especially root canals, and sometimes for fixing on a crown.

Aconite is most generally used in the form of the tincture.

When applied to the skin, aconite causes at first a tingling sensation, then numbness and local anæsthesia, and for this purpose is employed in facial neuralgia. For neuralgia, the liniment of aconite is most often used in combination with liniment of belladonna and chloroform. Equal parts of tincture of aconite and chloroform is said to give almost instant relief from pain after the extraction of a tooth, applied on a pellet of cotton wool in the socket of the extracted tooth.

Capsicum is employed externally as a rubefacient and counter irritant, and is used principally for periostitis, and chronic abscess in the form of plasters ; those prepared from the formulæ of Dr. Williams, being generally considered the best, as they contain a small quantity of opium and menthol, and thus act upon the sensitive as well as the vaso-motor nerve filaments, and subdue the pain of periosteal inflammation much more rapidly ; the addition of these two drugs also enables the plaster to be made with a considerably larger proportion of mustard and capsicum.

Permanganate of Potassium is an antiseptic, disinfectant, and deodorant.

A dilute solution is useful for a mouth wash in cases of offensive breath, and where there is a purulent discharge, as in alveolar periostitis and necrosis, also as an injection into antral abscesses and for syringing root canals. It is also useful as a mouth wash after all cases of extraction, to be used three times a day.

Chlorate of Potassium is much used in inflamed, ulcerated and aphthous states of the mouth, and acts as a specific in ulcerative stomatitis and tonsilitis.

For Ulcerative Stomatitis the dose is for a child 3 years of age, 3 grains; for a child from 4 to 9 years of age, 5 grains given every four hours in a little sweetened water.

For Tonsilitis it is given in combination with tincture of perchloride of iron as in the following recipe :

Tr. Ferri Perchlor.	ʒii.
Pot. Chlor.	80 gr.
Aq. Chlorof.	℥ii.
Aq. ad.	℥viii.

one-eighth part ter die.

Mastic is a concrete resinous exudation obtained byincisions from the bark of the stem and large branches of pistacia lentiscus.

The cement is made by dissolving the mastic in ether or collodion.

Its only use is as a temporary filling for teeth.

This, gentlemen, concludes my notes. I regret that it has been out of my power to bring forward anything original, but if any of you have profited in the least degree I shall feel well compensated for my researches.

CARBORUNDUM.

A recent issue of *Invention* contains a short account of this new material. It is composed of carbon and silicon, in proportion of one atom of each to a molecule. The combination of the two elements is brought about by electrical action, and consists of the introduction into a box of clay of an intimate mixture of carbon and sand, into each end of which project one or more rods, or electrodes, of carbon, and through these and the mixture of carbon and sand passes a current of electricity of a sufficient quantity, for the proper length of time, to fuse the mass, and cause the reduction of the contained silicon and its subsequent combination with a portion of the carbon.

When removed from the furnace the carborundum is in a cinder-like mass, consisting of crystals varying in size. The mass is then treated with acids to remove impurities, washed, dried and crushed, the crystals being then separated in sizes or degrees of fineness. The most unique property of the compound is that by its means one is enabled to cut and polish diamonds, and it seems it is proving a valuable adjunct to the dental office.

British Journal of Dental Science.

LONDON, NOVEMBER 1st, 1893.

THE RE-OPENING OF THE SCHOOLS.

ALTHOUGH complete returns are not yet to hand, the published list of entries of students at the Medical Schools and Colleges shows a fair muster of recruits. It was to be expected that the additional year now added to the curriculum would make intending students weigh the position carefully, and that the increase in time and expense would influence some to choose another career. The Students' Register shows that last year there was a falling off of 734 from the total of the previous year; the number, indeed, was lower than for any year since 1876. It would be interesting to discover what walk in life those young men have chosen who otherwise would probably have at least kept up the average number of medical students. Some, certainly, may have found their way to the Dental Students' Register, but it could hardly be in the hope of experiencing the benefit of a shorter curriculum. The Preliminary Examination required for each is the same, and if the full pupilage of three years be rigidly adhered to, the Dental curriculum is as exacting, in point of time, as the Medical. Could the stringency of examinations account for a transference from the medical to the dental? According to a pamphlet sent by the General Medical Council to the Royal College of Surgeons of England dealing with the professional Examinations in 1892, forty-one per cent. of the candidates failed in the first examination, forty-five per cent. in the second, and thirty-five per cent. in the third. It was stated at the meeting of the General Medical Council that if these failures were distributed all round, each medical student might expect to be "plucked" three times in the course of his education. At the two examinations by the Dental Board of the Royal College of Surgeons of England there were 92 candidates, 57 of whom received diplomas, and 35 were referred. But the comparison of figures such as these does not necessarily explain matters with regard to the stringency of examinations. The results would seem to depend more upon the personal equation and natural selection of the candidates. For instance, 50 per cent. were rejected for the F.R.C.S., but the same ratio held good for the L.S.A., whilst for the M.D. London, there were two failures out of 62 candidates.

So far as we can learn, the entry of dental students this year in England is slightly over one hundred, and an interesting point presents itself when this number is considered in connection with the reduction gradually taking place in the Dentists' Register. In 1879 the number of names on the first Register was 5,289; nine per cent. of these possessed a dental diploma. In 1891 the number was 4,817, twenty-three per cent. being qualified. In 1892 there was a rise to 4,896, but it must be remembered that this was in some sense a year of grace after which the operation of Clause 37 was suspended. Again there was a reduction, and the present Register shows the same number as in 1891, twenty-five per cent. holding a dental diploma. It is therefore apparent that if, as may be expected, there is a tendency in the natural course of events for such a continued elimination of old names, more students should be entering than at present seems to be the case, if the original number on the Register is to be maintained. The deficiency is 472, and although there may be more entries in other parts of the United Kingdom, 100 students for England seem scarcely enough.

When we reflect that the social position of the dental profession is steadily improving, and that, so far from the field of practice becoming restricted, there is reason to think the public are demanding increased attention, we must not be surprised if some who would otherwise have commenced a strictly medical career should be tempted to enter upon dental work. There appears to be no doubt but that the young qualified dentist has no difficulty in obtaining an assistantship far more remunerative than that at the disposal of his medical *confrere.*

PENTAL AS AN ANÆSTHETIC.—Dr. Schirmer criticizes in the October number of *Deutsche Monatsschrift fur Zahnheilkunde*, the publications of Miss Kleindienst, and Max Baûchwitz, with regard to the employment of Pental as an anæsthetic. The first author studied the action upon the heart and respiration in cold-blooded animals (frog) and warm-blooded (rabbits), and was unable to find any injurious influence. In addition to this, however, she had examined the urine of twelve pentalized patients between the third and fourth day after the administration, and found albuminuria in eight cases, and even blood twice. She therefore concluded that, in some way not recognized, $C H_{10}$ brings about a condition of things implying a nephritic albuminuria, and upon these eight cases Fraulein Kleindienst bases a strong opinion as to the use of Pental. Baûchwitz, upon the advice of Hollaender, now undertook fresh experiments in the same direction. He used the acetic-ferrocyankali test as the most reliable, and by very exact experiments proved that Fraulein Kleindienst's researches were erroneous, for in no case could so much as a trace of albumen be discovered. Supported by Hollaender's experience Bauchwitz therefore came to the conclusion that Pental remains the best anæsthetic, for private dental practice, which we at present possess.

PHYSIOLOGICAL ACTION OF OYYGEN.—The British Association appointed a committee last year for the purpose of ascertaining whether oxygen gas is of any service as a restorative in carbonic acid poisoning. The general conclusions come to seem to show that oxygen is of no greater service than pure air in cases of asphyxia, and that in connection with miners it would be well to keep a few cylinders of air, with nose and mouth pieces, ready for use in those parts of the workings where men might be most easily imprisoned. Pure oxygen, when inhaled by a healthy man for five minutes, produces no appreciable effect on the respiratory rate and volume nor on the pulse rate or volume. The Committee point out that the points not proved are whether the gas produces toxic or other effects after a long inhalation ; whether it may be of service in diminished respiratory surface, as in pneumonia ; and whether it can cure in many diseases where it has received the credit.

REMOVAL OF THE GASSERIAN GANGLION.—*The Medical News* contains the report of a case where Rose's operation was performed for trifacial neuralgia. The patient, a woman aged 60 years, had suffered for nearly eight years. Relief for five months followed excision of the second division of the fifth nerve at the infra-orbital foramen. Another period of five months' relief was obtained by excision of all three branches at their exit from the skull. A third operation, on the second division, gave no relief whatever, and the patient used, in ten days, four pounds of chloroform for inhalation. Mr. Parkhill removed the coronoid process and instead of refixing the detached lower border of the zygoma to the adjacent bone stitched it to the temporal fascia, thus saving much time and getting an equally good result. The patient made a speedy recovery, and ten months after the removal of the ganglion had not experienced any return of the pain.

AN EVENING CLASS FOR PHYSIOLOGY.—Those who have the inclination for evening study may be glad to know that a course of lectures on Physiology with microscopical demonstrations has been arranged at King's College, London. Mr. Peyton Beale, F.R.C.S., has charge of this course, which is in connection with the Evening Class Department, and lectures on Mondays, at 6 p.m. fro m October to March. Applications for further particulars should be addressed to the Secretary, J. W. Cunningham, Esq

Abstracts of British & Foreign Journals.

WHY DO TEETH DECAY MORE RAPIDLY DURING ILLNESS THAN AT OTHER TIMES?

By F. S. Whitslar, D.D.S., Youngstown, O.

Under various circumstances, and in many, if not in most diseases, the saliva, according to the testimony of physiologists is changed from its normal alkaline to an acid reaction.

Lehman says that the saliva is usually acid during fasting. This condition usually occurs, to a great extent, in most cases of illness of such severity as to require continued active medication.

It is worthy of note that while the patient is ill enough to require medical treatment, whether from the direct effect of the disease in altering the secretions, or from the fasting consequent upon the sickness producing that effect, or both, the teeth are constantly bathed in almost the only kind of article that has, or can have, any deleterious effect upon them. It may be said that this acidity is but slight in degree, yet it is frequently long continued and constant, and therefore must produce serious effects. Now, while it is maintained that teeth after the emergence through the gums, decay more rapidly during sickness than at other times, there is, however, another time and manner in which diseases seriously affect the teeth. This is during the state of formation within the gums, where the acid reaction of abnormal saliva does not come in contact with them. Zymotic diseases, or in fact any disease at this stage of life, which interrupts or suspends the developmental process, will prevent them from a full and perfect development It is not very uncommon to see teeth where there is but very little enamel on or near their cutting edges or grinding surfaces, while higher up on the crowns of the same teeth, it is of normal quantity and quality, showing that the developmental process had from some cause been suspended and afterward restored. Furthermore, this effect is made manifest by some of the teeth of the same individual being found imperfect in their construction, while the others are found sound and perfect. The imperfect ones being in pairs, and of the same class, showing that the same cause that acted deleteriously on one had the same action on the others that were in the same stage of their formative process.

Now to return to the question, why do teeth decay more frequently and more rapidly during sickness than at other times? I wish to notice two classes as examples—habitual beer drinkers and dyspeptics. I select these two classes because the effects are usually more marked than in any other kind of disease. The acidity of the oral secretions, in both classes, is generally most excessive, while the latter is peculiarly liable to great acidity of the gastric secretions, and this is frequently regurgitated into the mouth, and is often so strongly acid as to produce at the time a very disagreeable effect upon the teeth. In such cases, if the teeth were sound before, they will be found most decayed at their necks, that is just at the margins of the gums; for in such cases this acid finds most ready lodgment there, and is kept constantly in contact with the teeth. Besides, there too the enamel is thinnest, and affords therefore, the least protection to the body of the tooth; and then what enamel there was will be found removed in large patches from many or even all of the teeth, and frequently softened and rendered friable to a much greater extent. If the teeth have the least imperfections in their formation—a want of union of the enamel at the lines of union of that substance, from the different points of its deposit or are decayed ever so slightly, they afford lodgment for this acid and also afford a very favourable opportunity for its full and ready action, producing thereby most disastrous consequences.

An experience of nearly forty years satisfies me that in all diseases which change the saliva from an alkaline to an acid reaction, teeth decay more rapidly in proportion as the saliva is rendered more or less acid, and to the length of time that such change continues.

Medicines, when so administered as to secure the object for which they are given—the restoration of the secretions from an abnormal to their normal condition, the restoration of the body from disease to health—instead of injuring the teeth, protect them from injury.

The Ohio Dental Journal.

EXCESSIVE MENTAL EXCITEMENT AND SOME OF ITS CONSEQUENCES.

BY DR. T. R. GLYNN.

HE proposed particularly to consider the weakness or irritability of the nervous system which seems to be a characteristic of civilized man in the present age, or, in other words, nervous exhaustion, which might be defined as fatigue by excess of function. After referring to Charles Fere's observations, which show that psychical impressions and processes exert a wide influence upon the body at large, and that overactivity of the brain is accompanied by contraction of the arteries throughout the body, lowering of tonicity and general vital depression, he pointed out that when the nervous diathesis had been acquired, the repetition of the causes that induced it was likely to lead to the development of some more serious nervous disorder. When the diathesis was inherited the predisposition necessarily existed. The nervous individual was likely to suffer from headaches and neuralgias; a little extra fatigue would perhaps render him sleepless or dyspeptic, and he readily fell a victim to neurasthenia. If he caught a fever he would probably be delirious, and traumatisms, intoxications, general disorders, and mental shocks would tend to lead to the development of serious nervous accidents. If nervousness was a characteristic of the mental state of civilised man in our times the subject was one of national importance as well as of professional interest. It was a vexed question how far the pressure of education had acted injuriously on the young. It might be granted that acute troubles rarely resulted from over-pressure, but that a weak and irritable condition of brain was too often produced, betraying itself in an alteration of the child's disposition and character, predisposing to the development of neuroses, and being a source of misery to the subject of it years afterwards. Enforced sedentariness, poor food, and close rooms often co-operated in reducing the nervous energy. He had, however no hesitation in stating that the discipline of a well-regulated school might prove of the greatest advantage to the nervous subject. He had known headache and other neurotic troubles, which proved most obstinate whilst a child was under home influence disappear under school training. The ordinary ladies' school he considered was as pernicious as it was possible for any training institution to be, being hurtful alike to mind and body. The child often escaped the ill-effects of injudicious training by reason of circumstances inherent to its youth. The difficulty of retaining the attention of children for any length of time was well-known to teachers, their labour was not associated with protracted anxiety, and as soon as it was over they were prompted to take violent exercise. Some of the conditions of modern life were especially injurious to the nervous system. Among these were the lessening of social distinctions, and the opening of new possibilities of advancement and new roads to fortune; the struggle for existence was keener, and the less gifted and the weaker fell. Noise, glare, turmoil, and unsightliness abounded, and kept the senses in constant tension. The abuse of tea, coffee, tobacco and alcohol tended to increase the evil, as did also the hurry and excitement in which many persons spent their holidays. Contemporaneous music reflected the mental tendencies of the day. The same kind of unhealthy excitement might be traced in many of the popular pursuits of the day—the novel, the drama, the dance. An exhausted brain was easily excited but easily fatigued, hence the need of artificial excitants. The influence of town life was highly prejudicial, and the inhabitants of cities tended to die out. Not alone functional, but also organic disease of the nervous system was more common in towns; for instance, while tuberculous disease of the lungs was 23 per cent. more common in London than in the rest of the country, tuberculous meningitis was 64 per cent. more common. General paralysis had lately become a very common disease, especially among brain workers, the liberal professions furnishing 38 per cent .of the cases in the Bicetre. Statistics were quoted to show that a very large increase had taken place in the proportion of lunatics to the population in Europe and America during the last forty years, and in France the proportion of suicides had increased more than threefold since 1827. Anæmia was another condition probably associated with the nervous irritability characterising our age. It was possible that while the present generation suffered from anæmia their forefathers suffered from plethora, and that bleeding was a remedy capable of wider application in their day than it was in ours. We could not imagine that acute observers like John Hunter and Marshall Hall would have practised bleeding had they not found that it was usually a beneficial proceeding. The perfectly healthy man should hardly be conscious of physical or mental fatigue, a day of congenial work should close with voluptuous contentment; but the man who is deficient in nervous energy readily becomes painfully tired, he has attacks of temporary neurasthenia with its depressive pains and dyspepsia. At the end of a day's toil he can no longer collect energy, or concentrate attention for further occupation, he goes to bed but probably cannot sleep, his mind is now hopelessly active, or perhaps he sleeps but wakens in the early morning in a state bordering on melancholia, miserably depressed and filled with dark forebodings. When these accidents are frequently repeated genuine neurasthenia is developed and all the miseries described become aggravated and fasten on the victim with almost hopeless obstinacy. This is a serious catastrophe, for the disease not only renders life a burden, but may terminate in graver mental disorders—melancholia or mania or lead to suicide. The subject of nervous exhaustion was not likely to see a medical adviser until he was becoming neurasthenic and had commenced to take a melancholy interest in his organism—to study his digestion, to talk of his liver, and to watch his bowels. His doctor's first care should be to consider not "What shall I prescribe?" but "How is this man's life to be modified for his good?" The patient might be inclined to sleeplessness but he must not be dosed with bromides and chloral, dyspeptic but he must not require papain and pepsine, weakly but he did not need quinine and alcohol. The patient's idea of exercise will probably be limited to the aimless constitutional walk or the mild aperient pill. The saddle, the gun, the fishing rod, the cycle, the golf club are the remedies he needs. He may not require less work but more work, mental and physical, in a different direction.

British Medical Journal.

A SOLDER FOR ALUMINUM.—The solder is an alloy of aluminum and tin, suitable proportions, being 45 parts tin to 11 parts aluminum. The metals are melted separately, poured together, and then cast into slugs. No flux is required. *Scientific American.*

SOME HYGIENIC CONSIDERATIONS RELATING TO THE DENTIST HIMSELF.

By Garrett Newkirk, M.D., Chicago, Ill.

The operative dentist works for the most part standing, but not in an easy and natural position. This is more or less strained, distorted and awkward. The operator by reason of the delicate character of his work realizes constantly the necessity of the utmost steadiness. Hence the bones, tendons and muscles engaged in maintaining the special position of the body are often taxed to the utmost, with little opportunity for rest. The next time you are operating please observe how much effort you are making to hold the body still. This we do daily, but by habit without conscious attention. Now this is not in accordance with Nature's usual plan. Even the heart, which might at first glance seem to prove an exception—the heart could not do its work without rest. It rests auricle and ventricle alternately, fully one-third of the time between beats, sixty or more times each minute.

In dental operations it is not possible, to entirely avoid the strained positions and unequal exercise. But the amount varies greatly with different dentists, according as they take more or less pains in the adjustment of the chair and position of the patient. The muscles too steadily exercised, are first, the *extensors* of the trunk and lower limbs, (but these not equally) for holding the body in a rigid position, to afford a fixed basis for the accurate direction of the instrument in use. In the usual somewhat curved forward position of the trunk, certain of the abdominal and anterior chest muscles bear a part, with an accompanying tendency to very light breathing. The operator ought every now and then to pause long enough to throw his shoulders back, as he will instinctively if he gives himself time, and freely expand the lungs. The lower flexor muscles generally are but little exercised in a steady position of the chair, except in the use of a treadle engine, then of one limb only. The muscles of the upper part of the trunk and arms are not used with any vigour, as they would be for example in rowing, or chopping or sawing wood. The determination of blood is of course to the parts most used, with a considerable tendency downward. The positions are not the most favourable for the return circulation, which presses heavily on the venous walls, so that if there be any beginnings of varicose veins in the limbs or abdominal regions or a disposition to passive congestions of the kidneys or other organs, or of effusion into joints or cellular tissue, the conditions are likely to be aggravated. The dangers are greater perhaps to the operator of heavy proportions, who remains more steadily in certain positions, being waited upon by an assistant to everything he needs, rather than the one of slighter build, more active, who waits much upon himself, especially if he goes often to the laboratory, and while there *sits*, as he should, at the bench. Other things being equal, the use of the inlay, by which we may often avoid a prolonged operation in the mouth is advisable, as a hygienic blessing to the dentist himself, without mentioning humanity toward the patient. It is a question if it is altogether an unmixed benefit for the dentist to operate exclusively at the chair and have his laboratory work all done by an assistant. If dentists would make use more generally of a stool while operating, the benefits resulting to both muscles and nerves would be inestimable. For we must not forget in this connection the relation of our question to the brain and nerves. There is special tension on nerves of the eye, also upon those which control and give steadiness to the hand, and those which govern all the overtaxed muscles. Special tax also upon that balance wheel of the organism which enables one to exercse patience and self control; the overstrain of which is occasionally evidenced by irritability, and possibly ill-temper—always an evidence of weakness, either inherent or produced by overwork.

After advising shorter hours to those who are working more than six, advising the studied use of all the advantages offered by the best of chairs, the use of the stool and frequent changes of position while operating, what shall we say as to the hygienic remedies or foils of irregular exercise, outside of office time? What shall the dentist do to secure the best effects upon health, upon happiness and usefulness also which so largely depend on health? Fixed rules cannot be laid down. These will be varied by a thousand differences of heredity, physique, circumstances, surroundings, personal choices and tastes. We may state the principles involved and make a few suggestions.

It is manifest that our outside diversions should exercise most those muscles which during our office hours we have exercised least, and *vice versa*. Mere walking, is a form of exercise ill adapted to the purpose, and with some people likely to do more harm than good. For one whose office is connected with his residence, it may be better to walk than not to be out of doors at all, but for exercise as rest it is not comparable with some other methods. Five minutes with a pair of oars, or a swinging axe, ten minutes with a wood-saw. or clubs, dumb-bells, or horizontal bar, would give more action to the muscles which need it, determine more blood and heat and tissue change in neglected parts than an hour of walking, not to speak of the added labour given to the last named parts already weary. Driving is better than walking, but still of a negative quality. It does not sufficiently exercise the muscles of the upper part of the trunk ; the position is likely to be slightly stooped and opposed to free and full expansion of the chest. Horseback riding is much better than either where one is so situated as to take it. The appliances found in a gymnasium, used systematically, regularly, and with special care as to moderation, would be excellent.

The danger ever present with those seeking recreative exercise is this : the temptation to forget the true object and overdo the matter, by trying to compete with others in speed. Attempts at high speed should never be made by the nonprofessional rower or rider. Otherwise the real object and benefit sought is surely defeated, and the man might better have remained quiet.

The Dental Review.

TREATMENT OF ABSCESS OF THE MAXILLARY SINUS.

By Dr. E. Lecaudey, Paris.

In more than thirty years I have cured among my clients over sixty cases of abscess of the maxillary sinus.

At first I employed a tin tube, of one and a half millemetres in diameter, with bent points, which I would fix in the interior opening of the sinus. Experience taught me the length of time required in such a treatment, and the difficulty with which a fistula would close up. Having been a long time studying the subject, I once read a thesis by Dr. Veillard, treating of anal fistula, in which was described treatment with zinc chloride. The idea then struck me to apply the treatment to fistula of the sinus, and I obtained most excellent results.

The cases that I have oftenest treated were caused by the second bicuspid; less frequently, by the cuspid and first molar. The treatment has generally lasted from eight to twenty-one days, and has never lasted more than three weeks. My observation has taught me that the more one dispenses with the small tube, the quicker the fistula will close up After having performed the extraction, I wash carefully with hydrogen peroxide, the cavity of the sinus. Then I inject the following :

Chloride of zinc.................	1	gramme.
Phenic acid........................	5	„
Distilled water..................	100	„

In order to keep the fistula open, I place a little silk stringe saturated with wax; and it, as rarely occurs, will not close up, I take a small pencil of gutta-percha, which I saturats with a little chloride of zinc, place it for twenty-four hours inside the fistula, and the edges close up by deep cicatrisation very rapidly.

INLAY FILLINGS.

By L. L. Dunbar.

For minute "pinhead" cavities there has been recommended the use of different sized cylinders of vulcanized white rubber. These are inserted with oxy-phosphate, and after being cut off, are well polished, making a more durable filling than oxy-phosphorate alone, and quite as sightly. The use of this method ought to be more general, as it is a really valuable means for meeting the cases under consideration. Starting from this idea I have been for some time successfully employing glass cylinders for the same purpose, using the old-fashioned opalescent glass, so common thirty or more years ago as curtain supports in parlour or drawing-room decoration. A piece of this can be heated over an ordinary Bunsen flame, and if care is used can be drawn out into round sticks of variou sizes down to the diameter of an ordinary pin. No colour shading is required, or, if necessary, cylinders of various shades can be provided, although this form of glass presents a shade more nearly in accord with translucent enamel than any result ever attained by fusing glass inlays. They are more easily handled, and half a dozen satisfactory inlays can be made while one is being made in any other way—the only requisite being several sizes of fissure burs (square end) with an assortment of glass cylinders of corresponding diameters. Prepare the cavities, several at a time, taking the precaution to isolate the teeth to be operated upon by applying the dam. After selecting the appropriate cylinder for each cavity, nick it on two sides where it is designed to break off, and the inlay is ready for insertion. One batch of oxyphosphate will then do for all that have been prepared. After allowing a sufficient time to set perfectly, the protruding cylinder can be stoned down and polished, the result thus attained will be an inlay nearly invisible, in every way satisfactory from an artistic standpoint, and, what is better still, at a saving of time and expense that will be appreciated by patient and operator alike.

Pacific Coast Dentist.

AMBLYOPIA DUE TO DENTAL IRRITATION.

By J. W. Park.

The patient complained of headaches, blurred vision, etc. R. E V.=6—26, L. E. V.=6—6, with correction of ametropia V=6—6 in either eye. However, she returned in a few days reporting rapid failure of vision of right eye; vision was reduced to counting fingers at ten inches. Action of pupil was sluggish; ophthalmoscopic examination revealed nothing to account for the trouble. Diagnosis, however, was made of retro-bulbaroptic neuritis, and she was put on potassium iodide treatment. Vision continued to fail. It was suggested by one of the physicians who saw her to examine her teeth, which, being done, it was found that five of her upper teeth on the right side had been filed down level with the gums, and that upon these she was wearing a set of artificial teeth. Four days after the extraction of the stumps of teeth her vision showed an improvement. In less than two months vision was fully restored and showed no change at a later date.

"This was undoubtedly a case of amblyopia, due to dental irritation of the fifth pair. The pathology of these cases is not definitely known, but it is supposed to be due to some vaso-motor disturbances of the retina or centres of vision.

Annals of Ophthalmology.

Reports of Societies.

MANCHESTER ODONTOLOGICAL SOCIETY.

The Inaugural Meeting of the Session for 1893-4, of the above Society was held on Tuesday evening, October 3rd, at the Grand Hotel, Aytoun Street, Manchester. Mr. T. Murphy, President, in the chair. There was a large number of members present, and many visitors, including Dr. Patrick, of America.

APPLICATIONS FOR MEMBERSHIP.

Applications for Membership from the following gentlemen were read :—

Mr. Henry T. Dreschfeld, L.D.S. Edin., Burlington House, Oxford Road, Manchester.

Mr. George Kershaw, L.D.S. Eng., Heywood.

Mr. Arthur S. Pearse, L.D.S. Eng., 19, St. John Street, Manchester.

The President then read his Inaugural Address, which we publish on page 961.

VOTE OF THANKS TO THE PRESIDENT.

Mr. W. A. **HOOTON** proposed that the thanks of the Society be given to the President for his very suggestive and interesting address. It contained many points which would well bear discussion by the members of the Society on a future occasion. The resolution was seconded by Mr. Renshaw, and cordially endorsed by the meeting.

The President suitably responded.

ADDRESS AND DEMONSTRATION ON "SEAMLESS CROWNS," BY DR. PATRICK.

DR. PATRICK, who was very cordially received, said he was there that evening to give them an exposition on the *rationale* of crown and bridge work, but more particularly in regard to the former. In the first place he might say a few words in regard to the history of this kind of work. One would hardly have thought that the method of the crowning of a tooth would have lain so long unused by dentists. It was not until the latter part of the nineteenth century that work of this kind was attempted at all. In a pamphlet published in 1827, the fact was recorded of a case in which a tooth had been crowned; and in the *American Dental Science*, published by Dr. Harris, of Baltimore, there is a capital description given of the way in which this work should be done. That was in 1845. The main reason why this work had not been done successfully by dentists, was because they had not been acquainted with the proper process of preparing the substructure of the tooth for the superstructure. In other words, how to prepare the root of the tooth to receive the crown. If they thought for a moment, it was but a short time since they had learnt to clean out the roots of a tooth prior to filling it. It was done very imperfectly by the great majority of dentists even to-day, owing to the want of an intimate knowledge of the anatomy of the parts concerned. Gold crowns were put on to-day with a perfect disregard of the parts concerned in the operation. To examine some of the work, one would think that the dentist was a carpenter; he did not seem to recognise he was dealing with living tissue. Crown work was practised with great success in the United States, but even there a great deal of the work was done as it ought not to be done. He spoke knowingly on the subject. It was a source of wonder, however, to him that the work was done as well as it was—that was, the mechanical part of it—when they took into consideration the amount of time a student devoted to mechanical work. His wonder was still greater when he considered the length of time a jeweller's apprentice took to learn to make the commonest kind of watch mechanism. This bridge and crown work, when properly done, was really one of the triumphs of dentistry. There was, however, one important thing to remember, and that was—that to do good work, they must have good tools.

Turning to the blackboard, Dr. Patrick proceeded to illustrate his further remarks by means of diagrams.

Proceeding, he said that he himself never used a drill in a root canal, not on any account. He did not know whether the canal was straight or crooked, and it was absolutely necessary for the successful fitting of a crown, that the root should be perfectly filled. The only substance he had ever found that acted perfectly was gutta-percha, which he softened in chloroform, and then pushed up the root until he got the canal quite full. The greatest mistakes in filling were made with the incisors and bicuspids. The next thing to consider was the form of the root. They would all recognise the fact that in putting a crown on a tooth, they were dealing with a cone. That held good, no matter which of the teeth they were dealing with. They would, therefore, always have an undercut. Now, in order to made a band fit such a root, it was necessary to cut a bevel on the labial or buccal side of the tooth, and then put the band on slanting. The great advantage of that method was that they had to force the band only over one edge of the tooth, and very little pressure was needed to make it "tuck in" under the bulbous portion of the tooth on the lingual side. The question naturally arose, what would they do for a post? In answer to that he might say they would never want a post unless the tooth was much decayed below the gum. In that case it was first of all necessary to reconstruct with filling and a post, and then put the crown on in the usual way. Referring to bridge work, Dr. Patrick said that only in a few instances was it done as well as it should be. He also condemned the present shape and mode of attachment of posts. In every instance they should be cone-shaped and anchored to the root, and never to the crown. When they were fastened in the latter way, the continual pressure on the tooth had a tendency to loosen the post.

Dr. Patrick then demonstrated, with the aid of a machine of his own invention, the mode he employed in making seamless gold crowns

At the conclusion of the demonstration, Mr. P. **HEADRIDGE** rose to propose a vote of thanks to Dr. Patrick. In doing so, he said they must all be indebted to Dr. Patrick for the great ingenuity he had displayed that evening, and the many practical hints he had given them in the making of good crowns. It was a matter for congratulation that Dr. Patrick was a Lancashire man by birth.

Mr. **PLANCK** seconded the proposal, which, upon being put to the meeting was carried with acclamation.

Dr. **PATRICK**, in responding, referred with pleasure to the fact that he was an Englishman by birth. In America, he might say, more widened views were prevalent amongst the members of the dental profession than in England. He had come over to see for himself what the condition of English dentistry was, and on the whole he thought it was very satisfactory.

EXHIBITION OF DENTAL APPLIANCES BY MESSRS. C. ASH & SONS.

A vote of thanks was accorded to Messrs. Ash & Sons for the excellent display of instruments and appliances. Their exhibit included a selection of their new diatoric teeth, which were much admired for their correct reproduction of natural forms. The proceedings then terminated.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The usual monthly meeting of this society was held on Friday, October 13th. W. Rushton, Esq., President, in the chair.

The minutes of the previous meeting were read by the secretary and confirmed.

There were present as visitors Miss Halliday and Mr. Masters, to whom the President gave the usual welcome.

The LIBRARIAN announced the receipt of Messrs. Smale and Colyer's work on "Diseases and Injuries of the Teeth," from the publishers, Messrs. Longmans, Green & Co.

Mr. Masters and Mr. Worsley were proposed for membership of the Society, to be ballotted for at the next meeting.

The PRESIDENT announced the resignation of Mr. R. E. Nicholls as librarian to the Society, and that Mr. H. W. Tice had been appointed in his place.

CASUAL COMMUNICATIONS.

Mr. NICHOLLS brought forward a case of necrosis occurring in the lower jaw of a man 21 years of age—due to fracture of the mandible and laceration of the soft tissues consequent on the energetic attempts of a rural dentist to extract a broken down tooth. The sequestrum which came away was of the ordinary character and measured an inch and a half in length, an inch in breadth, one third of an inch in thickness.

When the patient first appeared, the halves of the lower jaw had re-united but there was great swelling and suppuration about the wounded part. The necrosed bone was allowed to come away of itself, the only treatment adopted being to syringe the part frequently with Condy's Fluid. The wound subsequently healed up satisfactorily.

Mr. **Jenkin** presented to the Society a second left upper molar having four well developed and divergent roots.

Mr. **Humby** said that recently in extracting a first lower permanent molar, the second bicuspid came away with it, and asked whether any gentleman present had had any experience in replacing sound teeth accidentally removed; he did not replace the one in question as it was affected by caries. He had heard that in replaced teeth, there was a difference in the mode of attachment; instead of being fibrous, it became a bony attachment, spiculæ of bone being sent out from the periosteum of the tooth to the socket.

Mr. **Greetham** said two years ago he had a similar accident in extracting a left lower molar, the tooth was locked between the second bicuspid and second molar. In removing the tooth the second bicuspid jumped up out of its socket; he replaced it in its socket, and upon seeing the tooth three months ago he found it quite firm and comfortable.

Mr. **Masters** said that in regulating an upper lateral, immediate torsion was resorted to; unfortunately the tooth came almost out of its socket, severing the pulp at the apical foramen. It was immediately replaced, and a plate was made to retain the tooth in position. Three months after, he had to stop the tooth, which was then quite firm, and on the application of a hot burnisher, it was found that the pulp was still alive.

Mr. **Farmer** said he had seen several cases of replantation, and mentioned one where in extracting a second upper bicuspid the first canine came away with it. It was replaced and ligatured in position, it went on all right for about nine months, and last July the patient complained of severe pain, and he had to extract the tooth. He then prepared a section of the root by the Weil process and found the periosteum fairly normal, but the pulp was dead.

Mr. **Greetham**, referring to a case of hæmorrhage, said that a patient came to him to have a left upper molar extracted. She told him that the first tooth she had extracted (12 years ago), occasioned a good deal of bleeding, but she had had two teeth extracted since, neither causing any trouble. In this case he did not resort to plugging, the bleeding having ceased before the patient left the surgery. All went well for three days, but on the morning of the 4th day the patient came back, the hæmorrhage being very profuse. He then plugged the sockets with tincture ferri perchlor., and the bleeding stopped in some 10 minutes and has not recurred. The patient told him that she had had a letter on that morning containing very unpleasant news, and that the bleeding came on within five minutes after reading the letter. Mr. Greetham thought that perhaps the shock consequent upon the receipt of this news, might have been the exciting cause of the secondary hæmorrhage.

Mr. HUMBY said that a doctor came to him about a central tooth, the pulp had been killed by a blow, and there was a small abscess. He opened up the pulp cavity and found the crown portion of the pulp dead but the root part was calcified.

Mr. FARMER brought forward an interesting case. A child, 11 years of age, came to the hospital about 6 weeks since, for treatment of a swelling in the upper jaw on the right side, which had been troubling her for about 6 or 7 months. She also complained of minor swellings occuring about every other day and then subsiding. On examination the mouth was very much inflamed on the right side, and no tooth could be seen beyond the first bicuspid (which was only partially erupted) on account of the inflamed condition of the gums and a fibrous adhesion between the tissues of the gums and cheek. By probing in the molar region the outlines of a tooth could be distinctly made out and the symptoms led Mr. Farmer to believe there was trouble in the antrum, apparently from this concealed tooth. He resolved to extract it, and this was done under gas. A large quantity of pus flowed down the right nostril and also down the socket. The patient has been going on well since the operation ; the roots of the tooth were hardly calcified at all.

Mr. SIDNEY SPOKES asked if any gentleman present had tried the new antiseptic Izal ; he first tried it for root dressing in a lower bicuspid, using the izal undiluted. He then filled the canal with hard paraffin wax and the tooth was perfectly comfortable with a permanent filling. Izal is a kind of emulsion of a substance derived from coal tar distillation, and was said to be not so irritating or injurious to the tissues as carbolic acid, and was about four times as strong as a germicide.

The PRESIDENT then called on Mr. H. W. Tice for his paper on "Drugs and Preparations used in the Surgery," which we publish on page 967.

DISCUSSION.

Mr. **CHARLES W. GLASSINGTON** in reference to the use of arsenic for devitalizing, said that he always thought it best to apply the rubber dam, to obviate any harmful results. As regards cocaine for the relief of sensitive dentine his experience was that it was useless if made into a solution. He always used it in the dry condition.

Mr. **SPOKES** said that Mr. Tice did not condemn the use of arsenic in children's teeth, he did not think that it should be applied to children's teeth as there were modes of treatment which would answer as well and which were not so dangerous. He thought that great stress should be laid on the careful application of nitrate of silver, especially when used in the solid form, and in alluding to its use for checking decay in children's teeth said that the cavity should be dried before its application.

Mr. **HUMBY** said that he did not think that the stains from the use of nitrate of silver was so easily removed as Mr. Tice would lead one to suppose, and thought that it should not be used for front teeth; he had found this drug very useful in the treatment of pyorrhœa alveolaris. In reference to the use of cocaine for sensitive dentine, he found that it caused pain at first, but this passed off if the solution was allowed to dry in the cavity. He did not think that tannin and creosote were good for root filling, as they seemed to alter their condition after a short time.

Mr. **FARMER** said he had found the liniment of iodine useful in alveolar abscess when other drugs had failed. A patient had an abscess at the root of a molar which had been crowned eighteen months, he had treated it in the usual way without much success, so he tried the liniment of iodine, packing the abscess with wool saturated with the liniment, and it went on well. With regard to the use of tannic acid and ferri perchloride, he had to extract a molar tooth for a patient who was subject to hæmorrhage; he plugged the roots with ferri perchloride and the bleeding ceased. At the end of a week he removod the plugs and the bleeding started again; he then plugged with tannic acid and gave the patient a plug to bite on, and it has gone on all right.

Mr. **ARNOLD PRAGER** said Mr. Tice had not mentioned chloride of ethyl; he had found this very effective for the relief of sensitive dentine.

Mr. NICHOLLS instancing the undesirability of fixing arsenical applications for the pulp with mastic dressings, cited the recent experience of his brother who had an upper wisdom tooth pulp treated in this manner, with the result that the cavity being a cervical one, the dressing leaked out upon the gum and down the side of the throat, causing considerable pain and sloughing. He did not like the application of arsenic for the removal of apical portions of pulps, he preferred strong carbolic acid or nitric acid carefully applied. The carbolic acid and liquor potassæ application recommended by Mr. Tomes, would be found very efficacious in most cases of pain after extraction. Repeated dressings of strong carbolic acid were to be preferred to arsenic for devitalising the pulps of temporary teeth.

Creosote he had found most useful in cases of chronic abscesses with fistulous openings on the gum where it could be made to pass right round the track from the apex to the external opening. He now used a solution of chloride of zinc in preference, as being quite as efficacious, and more pleasant, as well as easier in application.

With respect to the case of hæmorrhage mentioned by Mr. Farmer, consequent on his removal of plugs impregnated with perchloride of iron, he considered it best not to remove them, at all events in cases where it was suspected hæmorrhage would recur, as the plugs would ultimately come away without help.

Mr. Tice did not appear to have mentioned the use of cocaine as an obtundent of pain in the application of the rubber dam, in sensitive cases, nor in the application of clamps beyond erosive cavities beneath the edge of the gum, nor in the preparation of roots for crowns. Personally, the speaker had found this drug of considerable use in the extraction of roots, when applied externally, as the deliquesced salt upon the gum at the side of the root, but it was not of much use if the gum were greatly inflamed.

He would like to see zinc chloride more used than it was. As an obtunder of sensitive dentine especially in erosion cavities the deliquesced salts should be applied after the cavity had been dried with alcohol and hot air. Ordinary solutions were merely irritants. It is very effective if applied where the necks of the teeth are sensitive, the gums having receded.

For purifying putrid root canals and breaking down obstinate chronic abscess it will be found invaluable.

The **President** having called attention to the lateness of the hour, said that he thought the interesting discussion must close. Mr. Tice then replied and the meeting terminated with a hearty vote of thanks to him for his paper.

The next meeting is on Nov. 3rd at 8 p. m. in the new building. The paper is by Mr. Reeve upon "Vulcanite work."

Dental News.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

At the October sittings of the examiners the following gentlemen, having passed the necessary examinations, were admitted licentiates in dental surgery :—Harold E. Bullen, London ; George Campbell, Glasgow ; Charles S. Hull, Northampton ; Wm. Percy Pearson, Ashby ; James M. Simmers, Glasgow ; E. John Van Noorden, London.

DENTAL ASSOCIATION OF NEW SOUTH WALES.

At the General Meeting held in August, at the Australia Hotel, Mr. Hugh Paterson, was in the chair. The report and balance sheet for the past year were read and adopted. The report of the committee showed that the object of the association was to generally further the interests of the profession, and much work had been done during the past year in framing a bill to regulate the practice of dentistry in New South Wales. The goodwill and support of many prominent men had been promised to assist in the passage of the bill when it is brought before parliament, which is hoped will be at an early date. The association has already been productive of good results in promoting harmony and good feeling amongst the members of a hitherto scattered profession, and the committee were congratulated on the good results shown, special attention being directed to the good position of the finances, which were in credit to the extent of £128. The following officers were elected for the ensuing year :—President, Dr. A. Burne , vice-presidents, Mr. Hugh Paterson and Mr. Charles G. Hodgson ; hon. treasurer, Dr. W. Turner-Halstead ; hon. secretary, Mr. Horace Taylor ; auditors, Messrs. E. A. Gabriel and H. Newton ; committee, Messrs. S. Chaim, M. H. Nisbet, L.D.S., Arthur Hinder, D.D.S., F. G. Holloway, E. R. Magnus, D.D.S., C. C. Marshall, H. G. Low. A vote of thanks to the chairman closed the meeting.

DENTISTRY IN TASMANIA.

Government Notice. No. 244.

Chief Secretary's Office, 8th September, 1893.

The Governor in Council has been pleased, in accordance with the provisions of "The Dentists Act 1884," and "The Dentists Amendment Act, 18[illegible]0," to rescind the Regulations contained in Government Notice, No. 233, dated 4th August, 1893, and to substitute the following Regulations in lieu thereof.

By His Excellency's Command,
ADYE DOUGLAS.

Regulations under "*The Dentists Act*, 1884," (48 *Vict. No* 31), *and* "*The Dentists Amendment Act*, 1890," (54 *Vict, No*. 28.)

1. Each Member of the Board of Examiners shall continue in office during the pleasure of the Governor in Council : Provided, that any Member may resign by sending a written notice of his resignation to the Chief Secretary.

2. The Board of Examiners constituted under the said Act shall appoint one of their body to be Chairman of the Board, and such appointment shall be notified in the *Hobart Gazette*.

3. Three Members of the Board shall form a quorum.

4. The Board of Examiners shall have power to make, alter, or repeal Bye-laws regulating their proceedings and sitt-

ings, and generally as to the conduct of their business, subject to the approval of the Governor in Council.

5. There shall be two meetings of the Board in each year for the examination of candidates, one of such meetings to be holden in the month of January and the other in the month of July: Provided, that the Board may, in their discretion, and in any special case, appoint any time for an examination.

6. Every candidate for examination shall give to the Board notice in writing of his intention to present himself for examination at least one calendar month before the first day of the month of January or July, as the case may be, in which the examination will be held at which he so intends to present himself: Provided, that the Board may in any special case dispense with such notice or any notice.

7. Candidates for examination shall produce evidence that they have been for at least four consecutive years the apprentice or pupil of a person registered under "The Dentists Act, 1884," or the Imperial Act, 41 and 42 Victoria, Chapter 33, or entitled to be registered under the said Acts, or one of them, or of one or more such persons successively, and have been continuously and actually engaged during that period in the practice of Dentistry, and have completed the following educational course:—

(*a*) Matriculation at the University of Tasmania, or the passing of some examination recognised by the University as equivalent thereto, such Matriculation or examination to include passing in Latin, English, Arithmetic, Algebra, and Geometry as compulsory subjects of the examination.

(*b*) Attendance on the following courses of lectures and demonstrations at some period subsequent to such matriculation or examination:—

(1.) Two courses of lectures on general Anatomy and Physiology.

(2.) Two courses of lectures on general Surgery and Pathology, chiefly of the head and neck, to include instruction in the administration of Anæsthetics, the signs of Asphyxia and Syncope, and the treatment of threatened death from Anæsthetics.

(3) A course of lectures on Dental Materia Medica and Therapeutics.

(4) Two courses of lectures on Dental Surgery and Pathology.

(6) A course of demonstrations on general Anatomy, by dissections.

(7) A course of dissections at a recognized hospital during a period of not less than 12 months.

(8) A course of lectures on Chemistry and Metallurgy as applied to the practice of Dentistry.

(9) Two courses of lectures on Dental Mechanics.

(10) A course of Clinical lectures and Hospital Practice, during a period of not less than two years.

8. Subsequent to the completion of the foregoing educational course, candidates shall present themselves before the Board of Examiners, and shall be examined in all the subjects of their professional studies.

9. A candidate may present himself for examination at any age, but the licence qualifying him to practice will not be granted until he is 21.

10. The examination shall be conducted by written or printed questions, to which the candidate shall give written answers, and also by oral questions and answers. There shall be a paper upon each of the subjects for examination, containing not fewer than two or more than six questions. The time allowed for answering each paper shall be such time, not less than one or more than three hours, as the examiner notifies on the paper. Each candidate will be required to execute and show specimens of mechanical work in gold, vulcanite, or celluloid, as the examiners may decide.

11. The examination shall be conducted on the system of marks; and no candidate shall be deemed to have passed the examination who fails to attain the standard fixed by the Board for each subject.

12. The form of the Licence to be granted under the said Act shall be as follows :—

No. LICENCE.

Granted by the (*if more than one Board must be distinguished by some title*) Board of Examiners under "The Dentists Act, 1884," 48 Vict. No. 31.)

We, the undersigned Members of the Board of Examiners in Dental Surgery and Dentistry under "The Dentists Act, 1884," do hereby certify that having carefully examined we find fully qualified to practise Dental Surgery and Dentistry in any part of Tasmania; and we further certify that he is now entitled to be registered in the Dentists' Register under the said Act, and to the designation of Licentiate in Dental Surgery, Tasmania.

Dated this day of 18

Chairman.

Members of the Board of Examiners.

13. In the case of all pupils and apprentices who have been indentured previous to the gazetting of these Regulations the Board may at its discretion admit to a modified examination (*sine curriculum*), such examination to consist of—

General Anatomy and Physiology, chiefly of the head and neck.

General Surgery and Pathology, chiefly of the head and neck.

Dental Anatomy and Physiology.

Dental Surgery and Pathology.

Mechanical Dentistry, with practical tests.

14. The fee for the examination before the Dental Board shall be £5 5s.

15. A candidate failing to satisfy the Board of Examiners may be referred back to his studies for a period of not less than three months, when he may again present himself for examination upon payment of Two Guineas.

16. Candidates who have passed their examination shall be entitled to the Licence granted by the Board under "The Dentists' Act, 1884," (48 Vict. No. 31.)

17. Each candidate, before receiving his diploma, shall sign the following Declaration :—

DECLARATION.

I hereby promise faithfully in the event of my receiving from the Dental Board of Examiners a Licence entitling me to practise Dental Surgery and Dentistry in Tasmania, to refrain from conducting my practice by means of the Exhibition of Dental specimens, appliances, or apparatus in an open shop, window or show-case, or otherwise exposed to public inspection, or by the means of public advertisements or circulars describing modes of practice or patented or secret processes, or by the publication of a scale of professional charges, or to employ any other unbecoming modes of attracting business, nor will I allow my name to appear in connection with any one who does so. I also promise, so far as lies in my power, to maintain the honour and interests of the Dental Profession, and the spirit and provisions of "The Dentists Act," so long as I hold the Licence of the Dental Board of Examiners.

18. All regulations heretofore made under the above-mentioned Acts are hereby repealed.

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester during the month of September, 1893.

Number of Patients attended .	1123
Number of Extractions . .	1612
Number of Extractions under Anæsthetics .	280
Gold Stoppings . . .	67
Other Stoppings . . .	168
Miscellaneous {advice, temporary fillings, scalings, dressings, &c. . .	345
Crowns	13
Inlays	5
Total . . .	3613

HENRY T. DRESCHFELD, *House Dental Surgeon*.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291 Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 620. LONDON, NOV. 15, 1893. Vol. XXXVI.

CONTOUR VULCANITE WORK.*

By Norman Reeve.

Mr. President and Gentlemen,—The subjects usually discussed at these meetings are in connection with the operating room, or hospital studies. It may be for once in a way a pleasant change to have the workroom in from the background.

We were told last week that our work "had as it is, might be worse." May not we be allowed to entertain a little more hopeful view of the situation ? At least we can try to remedy this state of things. Most of us have our own time and labour-saving devices picked up in one workshop or another, things perhaps but very trifling in themselves, but all helping us to attain the great objects of turning out work quickly, cleanly, and accurately.

During the very few minutes that I claim your attention, let me confine myself entirely to Vulcanite Work, and more particularly to preparing cases for the flask and vulcanizing, for it is most certainly in this connection that the ultimate goodness or badness of the work is decided.

Whatever method of working is adopted, let it be remembered that it is easier to trim and smooth wax than to trim and smooth vulcanite. Most of you will allow that time is being wasted over a piece that requires, after vulcanizing, a file or scraper to smooth down anywhere except round the edges. The "scraper" indeed is getting as much out of date as the "circular chucks" which the depots used to supply for tearing down the vulcanite with the lathe. The objection to this "scraping" is not only the time taken in cutting away rough marks, and subsequent labour in sand-papering out the cuts, but the inability of even the most skilful workmen to make the plate an even thickness throughout, or to bring out anything like accurate rugæ.

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* A Paper read before the Students' Society, National Dental Hospital.

A very thin plate of vulcanite will suffice for strength if only it is made of a perfectly even thickness throughout, and its elasticity preserved by vulcanizing according to directions supplied with the rubber, or better still by personally testing the best time and temperature.

We are most of us familiar now with the working of the Steam Swager, and have seen the work that can rapidly be turned out by its aid. We know, too, of the excellent plan also intreduced by Mr. Humby, of bending up a sheet of rubber to an edentulous model, which has previously been painted over with a solution of Chloro-Rubber—vulcanizing, afterwards using this firm base plate to mount the teeth and wax on for trying in, and finally when the piece is flasked removing the old vulcanite by means of the blow-pipe. But as the author of these processes is generally with us it would be presumption on my part to do more than mention them. Both these methods require very little finishing after once they are out of the vulcanizer.

There are two other very good ways of obtaining even plates. I will send round a specimen of the first which I will describe, it is just as it was taken out of the flask having only been washed and dried. If gentlemen will kindly hand it round quickly, it will facilitate matters. It is not perhaps a suitable case for vulcanite at all, but it is a convenient mouth to take impressions of; it is my own; it suits for demonstrations very well. The first thing is to obtain a piece of wax of required thickness. The pink wax supplied by the depots being of one thickness, and that too thick, it is convenient then to make a stock of sheets of varying thicknesses. For this a mixture of brown coloured beeswax and old wax parings are melted together in a saucepan or pipkin and poured by any of the various methods. The table plate will be found as good as any. Take an ordinary large dinner plate, smear the surface all over with a soaped flannel, pour on melted wax to the depth of about ½ an inch and after about 15 seconds tilt the wax quickly back into the melting pot, when a very even film will be found to remain on the plate ; this can readily be detached by plunging it in a basin of cold water. An assortment of various thickness may thus be obtained.

The wax before pouring should be free from any of the minute bubbles which arise on the surface from overheating.

Next comes the bending of the wax to the model. The ordinary way of bending up wax by warming and pressing it on to the model with the thumb is open to the objection that the thumb being harder and more unyielding than the soft wax tends to press it very thin over the rugæ, and not at all into the interstices of the teeth. This may be avoided and the rugæ brought prominently and evenly on the surface, by heating some modelling composition in water, rendering the the wax pliable by dipping it for an instant in the water with the composition, then placing the wax roughly in position on the model and with the soft composition knead it well down into place; on parting the composition from the wax, the latter will be found to represent on the surface almost a duplicate of the surface of the model.

The composition has of course a tendency to stick to the wax, if too hot. Should this give trouble, dry the composition first, and smear the surface of it with a little French chalk

In subsequently setting up the teeth and preparing for the flask, care should be taken that the surface of the wax is not cut or scratched; when finally ready for the flask the surface of the wax should be polished by lightly rubbing it with the finger tip or cotton wool.

In flasking, do not apply oil or soap to the wax surface. Carefully open after placing the flask in boiling water for a few minutes; it is always better to do this or it frequently happens that the smooth surface of the plaster is spoilt, by particles of it adhering to the wax. Proceed with the packing in the usual manner. In the trial closing to test whether sufficient rubber has been used, I believe it is the usual plan to place a sheet of the calico supplied with the rubber between the halves of the flask before closing. A better practice is to immerse the reverse half of the flask in water before *beginning* packing; the moist surface on the plaster will be found ample to prevent the rubber sticking, and it does away with the annoyance of having the rubber and calico adhering as they often will do, half pulling the packed rubber out of the flask in separating them.

Before closing finally, warm the *reverse half* over a gas stove till it is nearly too hot to bear the hand. Then paint over once with Silicate of Soda solution, with a fine camel hair brush; this will be found to dry almost immediately as a fine glassy film. Close and vulcanize. Remove the piece from the flask the same day to avoid the granulating of the plaster. Should any silicate be found adhering to the surface after it is washed and dried, a little hydrochloric acid will remove it.

A piece vulcanized in this manner will require but a very few minutes for finishing, the edges are trimmed up, the surface scrubbed over with dragon cane and pumice powder, and finished with lathe brushes.

In this connection I should like to mention a polishing powder, and I have less hesitation in doing so now, as at the last meeting, another much advertised compound was discussed. This that I am about to name, made into a paste with water, will be found a most excellent material for removing fine scratches from vulcanite pieces before finally going to the whitening wheel,—it is no other than Brooke's soap. I can form no opinion of its composition except that it has a fine cutting property, such as one might expect from very finely powdered and sifted glass, but it is a capital substance to use after the pumice and before the whitening. It has one disadvantage, which you all know ; it is mentioned in the advertisement.

In preparing edentulous cases for the flask, it is always a good plan to work in wax of two colours, the basement wax of dark colour, the teeth being mounted on this with pink wax. So in finally contouring the gum the dark colour underneath gives a reliable guide to the thickness, and if this is not cut through, we know to a certainty that there is a sufficiency of material, without removing the .piece from the model.

The model should have, in all cases, a pencil mark round as far as we wish the plate to extend both on the gum and palate.

If trimmed up carefully before vulcanizing, an hour should be ample for filing up and finishing.

SECOND METHOD.

Should the foregoing plan of working not give a sufficiently accurate representation of the palate and rugæ, there is an alternative method by which the palate markings may be brought out line for line on the finished plate. It is a modification of Mr. Bennett's mode of working, for which he employed a Bell and Turner's flask. Briefly, the teeth are set up in the usual way, but before flasking the wax is cut completely out of the palate, leaving the portion only supporting the teeth, and that cut perpendicularly or very slightly sloping. The model is now flasked without wax in the palate at all. Bring the plaster just over the crowns of teeth, when set trim up and soap well all over the surface, then fill in the reverse half, allowing a good time for this to set. Separate the halves by tapping the sides and gentle levering. It is well before closing any flask to make a cross on the outside at the point where the leverage may be most advantageously applied.

The plaster representing the counterpart of the palate is next removed entire from the reverse half and trimmed away till little but the palate portion remains. This is replaced back on the model, having previously placed on the model a strip of wax the thickness it is intended the finished plate to be, plaster is again filled in. Of course this time when the flask is opened, the fresh plaster and the trimmed up palate are united together. Packing may now be proceeded with in the usual way.

There is one precaution that must be taken in manipulating this method, the insertion of the strip of wax tends to throw the palate mould bodily backwards, so before closing after packing, the impressions of the *anterior* surfaces of the molars and bicuspids (should any be standing), will require to be slightly scraped with a sharp knife to ensure an even thickness of rubber round the teeth.

It will also be at once seen that this process should only be used for fairly shallow cases, the whole arrangement partaking somewhat of the nature of two hats the same size within one hat box.

There is one other little point I should like just to mention, it is in connection with those very awkward cases in the upper jaw where the six front teeth alone remain standing all close together. Suction is generally difficult to obtain, so it becomes necessary to make a gold plate with bands round the front of the canines. The patient very naturally complains of their showing. A good way to get over the difficulty is to cover the band if broad with white rubber, or if narrow and near the gum, with pink. The band should be nicked with a very fine saw along both borders, the cuts being made close together and not more than a 1-32nd of an inch deep. The rest of the surface being barbed with a sharp pointed graver, in alternate directions, paint over the band with chloro-rubber and press a fragment of warmed rubber well down over this, flask and vulcanize.

Should it be afterwards necessary to tighten the band, gently warm it before doing so.

The little plate which I pass round is hardly a typical case, but it serves for the purpose of illustration, it has been in use a long time. The teeth you will notice are saddle-backs backed and soldered in the ordinary way.

That, gentlemen, concludes my notes. I have endeavoured to bear in mind the advice of our late President, and his description of the awful fate awaiting Originality, when its time comes to pay the visit to the Mansion on the Thames.

A CASE OF EXTENDED ALVEOLAR ABSCESS.*

By JAMES MAUGHAN, M.D.

Mr. Chairman and Gentlemen.—A case of alveolar abscess has come under my notice recently, and the circumstances surrounding it are of such importance as in my opinion to merit a brief sketch before your Society to-night.

The patient is a man æt. 45, an artisan, and one who has drunk not wisely but too well of the cup that inebriates. He gives a history of four or five previous swellings over upper and lower jaw. I saw him for the first time on October 24th. He had then been suffering for ten days from a swelling on left side of neck, red, hot, painful and throbbing. I hold in my hand a certificate signed by a doctor, and stating that the patient was suffering from Acute Tonsillitis or Quinsy. I found a large fluctuating swelling occupying the left side of the neck extending downwards to the left clavicle, across the root of the neck to the right side, and upwards to and involving the left lower jaw. The cause was evidently periostitis around the second left lower bicuspid.

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*Communicated to the Students' Society, National Dental Hospital, London.

I opened the abscess with a Syme's knife, and obtained two saucerfuls of creamy laudable pus. The wound was dressed with iodoform gauze, and there was an interruptedly good recovery.

A few words on such a case may not be out of place. First, as to the course and diagnosis. Tenderness of the gums occurs with swelling usually of the outer plate of the alveolus or the true jaw. Then the free edge of the gum becomes red, the pain meanwhile growing more and more severe. The periosteum round the apex of the tooth becomes detached and the alveolus absorbed. Then the pus may take one of two courses, first it may strip the periosteum along the whole length of the cementum, and escape at the free border. Secondly the outer alveolar wall may become absorbed, and a hole thus formed establish a communication between the apex of the tooth and the gum tissue. Then the sac containing pus burrows in the direction of least resistance.

On examination of the swelling we find :—

(1). Fluctuation. This should be felt for in the length of the neck rather than transversely. To obtain unequivocal fluctuation the abscess must be circumscribed, its covering thin and pliant, its background firm and resisting. It must contain at least half a drachm of pus, and the skin over the swelling must not be too sensitive.

(2) Pitting on pressure.

(3) There is a spot that is particularly sensitive, this is called the "tender spot." On the following day it has become more yielding, and is called the "soft spot." This develops in a couple of days into the "pointing spot," and this is where the abscess will burst if it be untreated.

The description I have given will easily help you to diagnose an alveolar abscess from the following diseases :—

Myeloid Sarcoma which expands both plates of the lower jaw, and is a chronic swelling very different to the rapid growth of an acute suppurative inflammation, the result of staphylococci *versus* leucocytes.

A fatty tumour grows from the cellular tissue, not involving any bone.

One of the many cystic tumours may simulate an abscess, but their chronicity and the absence of inflammation and fever will distinguish them.

A suppurating submaxillary gland gravitates downwards, and has no connection with the lower jaw.

A suppurating deep cervical gland may occur at the angle of the jaw, and be the consequence of scarlet fever, diphtheritic, or erysipelatous Tonsillitis, but here again the finger can be interposed between jaw and swelling.

The dangers attendant on a spreading alveolar abscess are:—

(1) Erosion of a large bloodvessel, carotid or jugular, or even aorta.

(2) Stripping periosteum from bone and causing necrosis.

(3) Pyæmia from Infective ostitis.

In the treatment of a case of alveolar abscess always remove the cause, in the teeth of the most determined opposition, prejudice and superstition on the part of parents and friends.

Secondly, if the removal of the offending tooth does not provide a sufficient drain for the pus, then make an incision. The sooner this is done the better, even if only a little sero-pus escape.

In opening an abscess remember the course of big vessels, and do not cut across them. It is wise also to remember the creases that come naturally in the skin, and try and make the incision along one. If an opening be made into the gum only, then the incision should be vertical.

Gentlemen, I am afraid I have trespassed too long upon your patience, but we will now call the man in, and you will be able to examine the case to your own satisfaction.

HYPERTROPHIA CEMENTALIS OF THE RIGHT UPPER WISDOM TOOTH.

Reported from the Royal University, Budapest.

By Dr. LUDWIG HATTYASY.

ANNA M., aged 44, from Vácz. The patient complains frequently, at daily intervals, of pain in the right upper series of teeth. Examination shows that the right upper 1st Biscuspid and 1st Molar are wanting, the remaining teeth are present and externally are normal. All of them are firmly implanted with the exception of the third molar, which is slightly movable. The patient considers this latter tooth the principal cause of her pain, and often tried to move it with her fingers, which gave her some relief. The pain stopped for some time, and the patient did not wish to lose the tooth. In the present case, chronic idiopathic pulpitis was to be excluded, as well as all kinds of periodontitis, and the pain radiated from the root part of this tooth, no other symptom of nerve disease being manifest, this was also excluded.

With these symptoms, Prof. Arkovy brings forward the case in his lectures on "Special Pathology," diagnosing the same by exclusion as hypertrophy of cementum, and advises extraction. Extraction performed completely justified the diagnosis. Around the conjoined roots, but principally on the palatal and distal sides of the segments, some excrescences corresponding to cement hypertrophies were recognised. The pain ceased and was not renewed in this part.

After six weeks the patient presented herself again and complained of pain in the root of the right lower second bicuspid. The greater part of the crown was gone, the pulp chamber was opened and there were the remains of a gangrenous pulp. The root was not sensitive to the touch or on movement. As a cause of the pain, cement hypertrophy was accepted. The extraction was exceptionally difficult. The lower third of the root was covered with a kind of round knob.

The case is worth mentioning, because it is generally held that cement hypertrophy is not diagnosable, while it accounts for the subjective symptoms and excludes other diseases which can be actually recognised.

We naturally feel that teeth are important organs, and we endeavour to save as many of them as possible; yet I believe from the bottom of my heart that we often urge our patients to retain teeth which are the cause of much discomfort, if not actual pain to them.—E. T. Darby.

British Journal of Dental Science.

LONDON, NOVEMBER 15th, 1893.

TETANUS.

Among the many dread diseases of which bacteriologists now give us some explanation, Tetanus may be mentioned as one with which the popular mind has a large experience. Newspaper reports of inquests and cases within common knowledge have brought home to the lay intelligence the possibility that a mere scratch, or other simple wound, may afterwards be followed by a train of symptoms summed up under the old-fashioned term " lock-jaw." Although it became recognised as an infective disease, experiments by inoculation did not prove successful, and it was not until an artificial tetanus had been established that a specific organism could be credited with producing this terrible condition. Even when pus which was known to contain the suspected bacillus was injected the characteristic symptoms failed to appear. This can now be explained by the fact that the organisms had been exposed to air, and that under this condition the special bacillus loses its virulence. It is, indeed, one of the anærobic micro-organisms which can only grow in the absence of oxygen. The spores were in the first place cultivated from garden soil ; but other dirt, and dust, have been found to contain them. Kitasato obtained a pure cultivation by placing a small piece of tissue from the wound of a patient (who had died from tetanus) into specially prepared gelatine in an atmosphere of hydrogen. Many other anærobic organisms were also developed, but the spores of the tetanus bacillus appeared first and by raising the temperature to 80°C the specific bacillus itself and all other organisms were destroyed, leaving only the tetanus spores alive to be removed and cultivated under suitable conditions. Such pure cultivations, however, soon lose their virulence, and it would even seem necessary that other organisms, which take up oxygen, should also be present in order that the tetanus bacillus may do its deadly work in the animal body. Another interesting feature is in connection with the observation that the bacillus seems to be localized in the neighbourhood of the wound and that it is not the organism itself but the poison it produces which gives rise to the tetanic symptoms. The poison is only formed slowly, and in healthy conditions the organisms are destroyed before the formation takes place.

The important point, however, in connection with these discoveries will, of course, be found to bear upon the application of the facts to the treatment or prevention of the disease. There is already a large literature upon the subject but the details of infection with tetanus are not as yet fully understood. A few of the experiments may be here noticed. In alluding to the treatment by serum, MORITZ states that a much larger quantity is required for the purposes of cure than of immunity, and that a very active serum is needed for cure in the case of man. Behring's serum has cured many acute and advanced cases of tetanus in mice and guinea-pigs, and MORITZ records the case of a boy successfully treated by injections. TIZZONI and CATTANI at first thought the spleen played an important part in artificially produced immunity but with the vaccine now at their disposal they are able to immunise rabbits without fail by two injections. Their recent experiments also show that rabbits whose spleens had been removed from eight to fifty days previously are quite as protected as those possessing spleens, and the serum from them had a marked immunising power. VAILLARD, VINCENT, and ROUGET recognise two forms of infection ; one due entirely to the tetanotoxin formed in the laboratory, the other which follows inoculation with earth being due to the presence of other baccilli which render it possible for specific tetanus spores to grow and form their toxins. RONCALI thinks that tetanus spores contained in earth produce tetanus quite independently of the presence or absence of other microbes. If these latter are present they reduce the resistance of the organism by means of their toxins and thus facilitate infection.

The Paris Correspondent of the *Lancet* records the case of M. Nicolas, of Lyons, who narrowly escaped falling a victim to an accidental innoculation by the prick of a syringe. The liquid injected was a filtered "culture" of such activity that one cubic centimetre killed a rabbit in thirty-six hours after an incubation of less than twenty-four hours. In M. Nicolas's case the duration of the disease was forty-one days, and the treatment seems to have consisted in the administration of very large doses of chloral. "The site of the inoculation was the first to respond to the action of the poison and the last to recover from it. Incubation lasted four days, despite the fact that the liquid inoculation consisted of soluble toxines. This supports the view of MM. Coarmant and Doyon according to which the soluble substances manufactured by Nicolaïer's bacillus are not in themselves toxic, but manufacture the true poison at the expense of the host into whose body they gain an entrance."

DOCTORS AND CHEMISTS.—The question as to chemists prescribing for their customers has recently been again discussed, and the medical journals have published complaints and suggested remedies. At two inquests, held on the same afternoon, an unqualified assistant to a chemist who had prescribed for both the children was censured in each case. *The Chemist and Druggist*, whilst not inclined to advocate the practice, points out that the Apothecaries' Act is still in force, and quotes the late Baron Bramwell as saying that a £20 penalty could be recovered from every chemist when ever he supplied a draught for a headache. The article concludes with a kind of challenge. "Why do not the medical profession enforce the law they have instead of raving after a new one? Simply because they dare not. They know that the public would tear their statute into rags in a day if they were to attempt to invoke it except in flagrant cases, and the wisest of them are aware that the penal section of that Act is contrary to the spirit of modern British legislation, and will certainly be repealed if any new general medical Bill offers a favourable opportunity."

THE GENERAL MEDICAL COUNCIL.—The next session of the Council will commence on the 28th inst. and it is expected that there will be a good deal of important business for consideration. Amongst other matters it is probable that a point will be raised with regard to the granting of diplomas by Medical Botanist Associations which we lately alluded to. We believe that petitions have been forwarded to the Council, in respect of the new departure by the Irish College as to the pupilage in Dental Mechanics no longer being essential in the curriculum for the L.D.S. diploma Another petition has also received signatures asking the Council to declare that advertising by dentists is disgraceful conduct in a professional sense, and that those who so offend may be removed from the Register. We do not know if this latter petition is to be considered this session. As a letter published in our "Dental News," points out, one such advertiser's name has actually been removed, but apparently without preventing a continuance in practice.

DENTAL DINNERS.—The Annual Dinner of Past and Present Students of the Dental Hospital of London will be held at the Hotel Metropole on December 2nd, under the presidency of J. W. Hulke, Esq., F.R.C.S. An analogous feast in connection with the National Dental Hospital is fixed for December 8th at the Holborn Restaurant. Prof. Michael Foster, of Cambridge, will occupy the Chair. After dinner there will be a distribution of Medals and Certificates, followed by music and recitations.

CHIMATTO ENAMEL.—Messrs. Fletcher, Russell and Co. are responsible for a new way of treating iron surfaces to prevent rust. In this process for protecting and decorating iron-work, a thin film of enamel is applied which acts as a proof against dirt and smoke without interfering with any fine details of pattern which may be necessary on the metal. It is also claimed that different colours, either dead or bright, and both gold and silver, either dull or polished, can be obtained without liability to change by exposure to air, or to any temperature up to bright red heat. We have had a small gas boiling burner, thus treated, in constant use in the workshop for a considerable time, and it certainly deserves merit as an ornamental as well as a useful object.

A LADY DENTIST AND HER PATIENT.—A case recorded in the *Dresden News* leads one to think that lady dentists may find it advisable to add a husband to the usual dental armamentarium. According to the report, a woman visited a lady dentist, Madame Kublinski, feeling the necessity of having some new teeth put in. A set was ordered, and it was agreed that the price should be forty marks. When the lady arrived for the teeth she explained to Madame Kublinski that, for the present, she could only pay fifteen marks on account, and the remainder would be paid in a fortnight. To this Madame Kublinski also consented. After the lapse of the time mentioned the patient reappeared, accompanied by her husband, and requested that a slight alteration should be made to the set of teeth. This was soon accomplished, but payment did not follow. This was not altogether satisfactory and a slight altercation began, which, through the intervention of Mr. Kublinski, also a dentist, assumed larger proportions. Finally the patient was requested by the Kublinskis to retire without her set of teeth. The patient's husband accepted the invitation and retired to obtain police assistance. During his absence the patient demanded the return of her teeth, but as she did not get them she, according to counsel's statement, shouted "help," "murder," &c. Thereupon Kublinski wished to eject the rioters, and the patient declared she was advanced down the steps by Kublinski in a rough way by pushes in the back. As a consequence of this assault she suffered from convulsions. Kublinski was fined thirty marks by the Imperial Police Direction, and against this he moved for a judicial decision. The bench, under the presidency of Dr. Weltz, did not consider that Kublinski had been guilty of a gross breach of the peace by his manner of treating the patient, but at the same time pointed out that there were other means at his command to secure her removal from his house than by such an unpleasant way of despatching her down the steps. The original fine was reduced to five marks.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual meeting of the fellows and members was held on the 2nd inst.; and the proceedings seems to have passed off much more quietly than has been the case in recent years. Whether the members are tired of struggling against the Council, or whether they are satisfied with the concessions already granted, does not appear, but there was only a sparse attendance. It may be, as the *British Medical Journal* states, that the fellows and members are heartily sick of meetings where they may pass resolutions with practical unanimity of which no notice is taken, and where the ordinary forms of public meetings are ignored. One paragraph in the Council's annual report would seem to indicate an attempt at conciliation. It suggests that separate meetings of the fellows and members should be convened at an early date after the publication ot the Gresham Royal Commission, in order that the views of the fellows and members may be ascertained upon the question of a New University for London.

Abstracts of British & Foreign Journals.

FOREIGN DIPLOMAS IN GREAT BRITAIN.

It is a common observation that nowhere in the world have foreigners more liberty, both civil and religious, than in old England. Occasionally some malicious boor who construes this word into the privilege of spitting, smoking, and generally misbehaving wherever he may desire, sends forth to the world his impressions of the old land as the most down-trodden on the face of the earth; but no people have been more just and generous in their judgments, more fair and frank in their estimate of the British character, than American writers and travellers.

Some—not all—of our contemporaries over the border, however, seem unable dispassionately to discuss the action of the General Medical Council in revoking the privilege heretofore awarded certain foreign dental colleges, while refusing any similar favour to foreign medical schools. The worthy editor of the *Review* makes it a personally national matter, and heads one of his recent editorials "No American need apply." It was always a mystery to us why the Council was so invidious as to discriminate in favour of two of the American schools against others which were equally reputable, especially when the Council was well aware when the choice was made that not even the two favoured came up to the required standard. It looked like favouritism, yet we do not see, in spite of the inconsistencies exhibited, that the action of the Council was specially against American colleges. It happened to be brought about by reason of the preference given in the past to two American schools; but it is possible to reason the matter coolly, and accept it in the spirit of justice to the British student and practitioner, who certainly have the first claim to consideration, otherwise it imposes a penalty upon the Briton, and holds forth a premium to foreign education.

It may surprise our American cousins to know that we Canadian dentists have no recognition whatever in the old home, and this in spite of the fact that in two of the provinces our matriculation is fully up to the standard required; and that for over twenty years we have had precisely the same system of indentured apprenticeship of four years of twelve months each year, with compulsory attendance upon Anatomy (theoretical and practical), Physiology and Chemistry, and primary and final examinations before boards of examiners elected by the profession. Brother Jonathan was getting favours refused to John Bull's own kids. One instance may be here mentioned as affecting Canadians, Australians and other loyal subjects of the Empire. One of our Canadian students, born within the sound of Bow-Bells, and desiring to return to England to practise, passed the very highest matriculation recognized in England, and graduated after three full courses at Harvard. He selected Harvard because he believed his diploma would be recognized. He then proceeded to London, presented the necessary papers to the Council, but was told the law gave him no "privilege," *as he was a British subject.* In fact, as a further instance of the unfairness of the Act to British subjects, he was positively refused a privilege granted a moment after to a friend from New York. He could get over the difficulty by forswearing his allegiance to his sovereign and becoming a citizen of a foreign nation!

Dominion Dental Journal.

CLEANING AND FILLING ROOTS.

By Dr. E. A. Bogue.

Beyond the enlargement of the orifices of roots, I do not believe in reaming out the canals of roots, because many are curved and some are flat, and there is too much danger of going through the sides. The instruments I use for getting into these small canals, which are left in their natural condition, are the small broaches used by jewellers. I buy them in quantity, and draw the temper from them to suit myself. They are four sided, and a few fibres of silk or cotton can be rolled or twisted on to them so firmly that they are not easily pulled off. (I use the raw silk because of its very long and tenacious fibre.) By twisting this instrument on which the silk has been rolled in the root the silk fibres become entangled in the pulp, and very often it can be removed whole.

I use these smooth instruments in this manner for the most part in preference to barbed ones because they rarely break, because they are efficient, and because they can be passed into a smaller canal than any instrument that has been barbed or bent into a hook at the end. Of course, to barb an instrument, or bend a hook on it, is to increase its diameter so that it will not enter these small canals, and every cut made in barbing the instrument increases the danger of its breaking. If the instrument does not break, the barbs are liable to break off and be left in the canal. A very few fibres of silk, lightly wound, do not increase the diameter of the instrument very much, and they hold and convey the carbolic acid I use if the pulp is not quite dead, and if they do not take the whole of it out, they entangle and take out pieces of it. In this way, cauterizing as you go, the whole of these delicate pulps can be, by a little time and patience and very little pain, entirely removed. The silk, which at first comes away loaded with pieces of pulp and blood blackened by the carbolic acid, will after a time come out white and clean. It may then be very difficult, and perhaps impossible to really fill such small canals with anything absolutely accurately; but if any of the mummifying fluids are used, carrying them to the apex with this instrument and the silk, I am not so very sure that it is necessary. Of course, I endeavour to fill them (and for this I use oxychloride, putting in the fluid alone at first, or chloro-percha, using the chloroform first, carrying them to the apex with the silk-wound instrument and then plunging into the canal a gold wire about the size of the broaches), but I am not always certain that the confined air does not act as a cushion and prevent making a perfect filling. I aim to be more certain of getting the pulp all out than to get the canal perfectly filled. Of course, I am talking of very small canals, so small, that the smallest broach we can get will only allow a few fibres of the silk to be used; and we must remember that such small canals at the apex are almost hair-like, and if well mummified by fluids which can be pumped into them, I do not fear them even if they are not absolutely filled.

International Journal.

INFECTION FROM THE MOUTH.

By Dr. E. L. CLIFFORD, Chicago.

"The healthy living organism may become poisoned (more or less slowly) by the accumulation within itself of deleterious substances normally elaborated, but imperfectly or defectively eliminated. Hence the slow and insidious onset of much ill health, and from which recovery is correspondingly slow." Now, in what way does this auto-infection of the system take place? Brown tells us that it can only be understood and explained by the mode in which we regard the phenomena of life. Life is a ceaseless decay with a ceaseless repair. "Normal health is conditioned on an incessant formation, transformation, and elimination of the effete or old organic materials, which must give place to new. It is this effete material which, therefore, represents a series of partial deaths, and which as the result of organic functional operations, constitutes life, during which the tissues and organs, in the processes of their metabolic changes, perform a constant function of disintegration, fabricating during these processes those alkaloids and extractives—those x, y, z's of pathology—which must be regarded as veritable 'physiological ashes' (Brunton), resulting from the processes of combustion of the elements of organic tissues."

Having thus, as we think, established the fact of the presence and power of these poisonous agents, let us for a while cast a glance at the oral cavity of man and see if any conclusions can be drawn as to the part it plays in promoting or preventing the formation of these factors in the causation of disease.

First, we will claim that no portion of the organism is of more consequence, or is more active as a veritable chemical laboratory, than the mouth. It is established that in the processes of putrefactive decomposition certain alkaloids are elaborated from the proteid substances. We all know that in the cleanest mouths certain portions of these proteid substances will remain as they are ingested with the food we take, as well as the water we drink and the air we breathe. We know also that in the cleanest and healthiest mouths absence of bacteriological influences is but an utter impossibility, and that these micro-organic agencies, furnished as they are with the proper media or food, conjoined with a suitable temperature and abundant moisture, make the mouth one of the best incubators that can be imagined. If this be so in mouths that have been no strangers to proper hygienic influences, how much more stronger is the fact established of the influence of this territory where carelessness and neglect have been a predominant feature? And, if we accept the theory of Aitken that these alkaloidal products vary as to their poisoning power according to the stage of decay at which they are produced, how important is it that these hygienic influences be enjoined and enforced. Then, again, accepting the dictum of Gautier, that these animal alkaloids cannot be excluded from the general economy, and that they are even necessary as a product of vital physiological processes, it certainly becomes the duty of that branch of medical science to which the very entrance of the digestive tract is allotted for control and treatment to see to it that the contaminating influences are eliminated. Again if the possibility of the formation of these animal alkaloids is acknowledged without the aid of bacteriological fermentation as shown by Gautier, how much more deleterious must be their effects and how much greater must be their production when conjoined to and assisted by these physiological agencies. If an abnormal amount of these poisonous substances is produced within the intestines when in any way disordered, how much more reasonable to conclude that the manufacturing capacity of the mouth is greatly increased when a condition that might be termed absolute filth is no stranger to the eye of the observant dental practitioner. If the amount of these agencies formed in the intestines of a healthy man in twenty-four hours is sufficient to kill him if absorbed and secretion stopped, it will require no great stretch of imagination to realize that enough poison could be taken from the mouth of the average dental patient to kill a small army of inoculated subjects it properly applied. Let the physician who doubts this statement recall the condition of wounds, and ponder over the difficulties of his prognosis when called to attend a traumatism caused by the human bite. The conclusions of Dr. Brunton will also go far to account for the thermal changes which take place and accompany these traumatisms when viewed from a clinical or pathological standpoint. Neither establishes well the part played by the human mouth as a generator of micro-organic life, and his testimony is corroborated by other investigators. Not only are large quantities of the animal alkaloids produced within the intestines and other portions of the alimentary tract, but large quantities are swallowed with innumerable bacteria which have already been produced in the mouth, and, as stated by Miller, they give rise to local and general disorders of the most serious nature, produced partly by the direct action of the micro-organisms and their products upon the teeth and the mucous membrane of the mouth, partly by swallowing large portions of bacteria, partly by carrying them into the lungs, particularly in cases of violent inspiration, and finally by their obtaining an entrance into the blood or lymph-vessels in various ways, such as by a breach in the continuity of the mucous membrane, brought about by mechanical injuries (wounds, extractives, etc.) through the medium of gangrenous, tooth-pulps, which usually lead to abscess at the point of infection, sometimes with secondary septicemia and pyemia, with fatal termination by resorption of poisonous waste products formed by bacteria, by the inspiration of particles of slime, small pieces of tartar, etc., containing bacteria, and by contact with the oral and pharyngeal cavities whose power of resistence has been impaired by debilitating diseases, mechanical injuries, etc. The very ante-chamber of man's vegetative existence, the very portal of the human body, furnishing as it does a most excellent nursery for these etiological factors, has not received from the general profession of medicine, within the past, that attention which its importance has deserved : but thanks to the work and investigations of some of the members of our specialty, the physician can no longer ignore these factors and feel that he has done justice to himself and the patient who has so confidently placed himself under his care. The results of the last few years have proven that if many of the diseases whose origin is enveloped in mystery could be traced to their source, they could be found to have originated within the oral cavity. And, as to the danger of such diseases as do follow from infection traced directly to the mouth, it seems there could be but one thought when we reflect that out of a carefully prepared table of one hundred and forty-nine cases by Miller, there resulted fifty deaths, nineteen cases of syphilis, two cases of blindness, and two cases of a loss of a part or the whole of one of the maxillæ.

Most of the work which has been done up to this time (with the exception of that done by Miller) has been with a view of attracting the attention of the dental specialist to infection which has been carried into the mouth from without, resulting in local manifestations which would naturally come under the supervision and treatment of the dentist. Miller has opened up and is cultivating with skill and determination a new field of research, and it seems to be his object, as it has been mine at this time, to attract the attention of the general practitioner to infections which are carried from the mouth and are planted in such soils as will prove favourable to their future germination and growth, hence proving an obstacle in the path of him who would assume to treat these pathological lesions without due appreciation of the important part these agencies and this location play as factors in etiology. It would not be difficult to convince the observant dentist of the truths here implied; it would only be necessary, were that our object to ask him to recall from his every-day experience, ample facts to substantiate the position. He has seen many times the general health of his patients vastly improved by a proper care of and attention to the mouth. He has studied, as a specialist, the chemical powers of decayed teeth, vitiated and poisoned secretions, and fully appreciates their power and influence; but I am forced to the belief that the physician of the past has either wilfully or ignorantly ignored the important part that this portal plays in the aggravation of diseases or as a preventive of cure. And this thought is only enhanced and enlarged by the recent practices of the more observant and faithful in calling to their assistance the aid of the competent orist in the effort to re-establish physiological perfection.

To make the attempt to enumerate and to classify the different ailments which are either caused or aggravated by the unhealthy and unwholesome condition of the mouth would be too great a task for one paper, if it were necessary, —but it is not. Miller has done and is doing this work for us, and it is our province to assist as much as possible in bringing to the notice of the profession the excellence of his work and the importance of his conclusions. Every physician of experience has often, no doubt, found himself facing the difficulty of not being able to account for the cause of many cases in practice; and while I would not have him look to the mouth as the harbinger of all these causes, I would ask his attention to that sphere as a possible, and I might say a probable, source in many cases.

There is no doubt that the nervous system, in many instances, and by many remote manifestations, is often injured to an alarming extent by the mechanical or chemical irritation emanating from an oral organ. The alimentary tract, we know, is often deprived of the privilege of doing its proper duty by contaminations implanted in the first bolus of food started on its course through a filthy and poisonous mouth, and added to the chemical contamination may well be mentioned the mechanical, which, in cases of mal-occlusion, tender and sore teeth, or edentulous mouths, prevent a proper mastication of food, entailing upon the stomach an office and a duty never designed by nature. This overwork of the stomach, combined, as it often is, with the chemical poisons of the diseased mouth, of course is sufficient to interrupt the proper function of other organs in the track as they are reached, and consequently the whole canal becomes a source of irritation and of poison. Now, of course, the primary source of health and growth being so far drawn from the path of rectitude laid out to furnish man with ease and not disease, it is evident that future digestion, assimilation, and nutrition is a matter of impossibility. If the ptomaines, leucomaines, and extractives are found in every organism and under all conditions, it is only rational to believe that they have a function to perform, even though it be only that of scavengers for other tissues. It would certainly not be wise to place a minor importance upon the function of the kidneys simply because their principal office seems to be that of eliminators ; on the contrary, the more reason why their integrity should be preserved and their powers not deteriorated, in order that those substances which seek this channel may be thrown off, and not left to accumulate to contaminate and to poison what would otherwise remain healthy.

Likewise, if micro-organisms are so universally present, the same facts would equally apply to them, and it is to the prevention of a growth of an abnormal quantity, and to the prevention of the introduction into the organism of specific germs, that the attention of the therapist of the future will be more particularly directed.

Aside from local inoculations and their results, which are usually classed among dental diseases, there are many forms of aberrations for which the condition of the mouth may be held responsible, especially paralyses, pareses, anæsthesias, and hyperæsthesias possibly adorn the border-line where it is difficult to determine whether the case is one for the specialist or the general practitioner ; but these lesions having long been noticed as doubtful in their etiology, are not classed among the obscure, and are often brought to the notice of the specialist and his assistance sought. But in those more obscure cases where the cause is generally clouded, mistakes are more liable to occur ; and the physician often battles in his efforts to restore a healthy status by the ever-interfering and constantly infecting products of this portal to man's existence. Miller has shown that pulmonary and bronchial diseases are excited or aggravated by the inspiration of germs from the oral cavity, as evidenced in the case cited of J. Israel, where primary actinomycotic infection followed the lodgment of a small piece of infected tartar within the lung. Several cases within my own practice confirmed the theory, and I have more than once seen the benefit and been able to forcibly bring it to the notice of the attending physician, where marked improvement followed the sterilization of the mouth, where efforts had proved fruitless prior to this step. Alimentary disorders are of such common occurrence, as a result of defective and contaminating mastication as to require no extended notice, and from this one condition all other organs are more or less affected, both nervous and vascular. Bednar, said to be the first to give clear expression to this view, in 1854, states that "indigestion may be brought about *directly* by taking into the stomach any substance already in a state of fermentation; *indirectly*, when the food taken into the stomach undergoes subsequent fermentation on account of its disproportion of the gastric juices." Henrock favoured this conception, and found in it a cause for a large number of diarrhœas, while Minkowski classifies under five heads the disturbances directly caused by the fermentative processes in the stomach.

1. Substances may be formed which irritate the mucous membrane of the stomach and bring about a state of catarrhal inflammation.
2. Considerable quantities of gas may be found heightening the mechanical insufficiency of the stomach.
3. Fermentation may lead to the production of substances having toxic properties.
4. In the fermentation of albuminous substances, alkaline products may arise which neutralize the gastric juice.
5. The gastric fermentations may exert a great influence on the functions of the intestines.

And now, what is our lesson? We would ask the general practitioner to regard the unhealthy condition of the oral cavity, with all of its contents, as an important factor in the causation or aggravation of diseases, having shown, as we believe, that within its boundaries lie the primary causes of many pathological lesions; that good, healthy, clean, and serviceable dental organs are absolutely essential to the enjoyment of physiological ease; and that in many cases the dental specialist has it within his power to render valuable assistance in the search for this result.

The Dental Cosmos.

THE PRESIDENT'S ADDRESS AT CHICAGO.

By L. D. SHEPARD, D.D.S., D.M.D ; Boston.

While in the decade, 1850 to 1860, colleges, magazines, and associations multiplied and jointly contributed to bring the profession more and more in touch with progressive thoughts and truths, the most distinctive discovery of the decade and most momentous in its influences was that property of gold, which, previously considered detrimental, was now to be welcomed as its most valuable characteristic—cohesion. The introduction of crystal gold and the discovery of the cohesiveness of freshly annealed foil laid the foundation for the new era in operative dentistry. Here was the renaissance of operative dentistry. Here was the dawn of the new era of restoration ; the parting line between antique mutilation and disfiguration and the subsequent devotion to beauty and typical form. It was the first great advance in practice. It was but natural that it should soon be supplemented by improved instruments, the mallet, the rubber dam and the engine. How great a revolution has resulted from these instruments and appliances none can fully realize, except those of us who have been long enough in practice to remember the struggles necessary in the old era. However radical or conservative are the views we hold to-day, there can be no question of the tremendous shaking up of the profession in its thoughts and practice which resulted from these innovations.

While most of the appliances just mentioned came in during the decade 1860 to 1870, they do not constitute the distinctive advance of that decade. There has been a disease of the mouth, which up to this time had been either unrecognised or regarded universally as incurable. It had from a remote period been described in the books as scurvy of the gums, or some such term, and had been treated only by washes and medication. It was considered inevitable and irremediable that sound teeth should be lost, self-extracted. A prophet arose who taught that such deplorable conditions were always preventable if taken in time, and frequently remediable by surgical treatment when the disease had made quite extensive inroads. He was received as prophets usually are, except by a few who early became his disciples. He was not a profound physiologist or pathologist, and did not present a theory or description which met the approval of experts ; but he had lived many years, was a man of observation and reflection, and while not scholastic or correct on every point, his observations had been clear and his deductions in the main correct, so that the treatment which he was the first to bring out and demonstrate is even at this day, after so many of our best pathologists have devoted much time to the study of the disease, accepted as the foundation of all treatment. The men who knew him, saw him operate, were taught by him, and were successful in following his methods, were wont to call the disease after his name. This was not correct, we know, for he originated only a treatment and did not describe a disease; but the fact remains, and there are enough living to testify to it, that as a result of his life and efforts, of the seed which he planted, a dire disease has been robbed of its terrors, the profession has been stimulated throughout the world to study its etiology and progress and the premature loss of teeth from this disease is no longer considered providential or respectable.

While operative dentistry has continued to ride constantly upon a flood-tide of progress and improvement, prosthetic dentistry has had its ebbs and floods. Sixty years ago the great mass of the profession were unskilled as operators, but fairly skilled as plate workers. They could not save teeth, but they could replace their loss. In plate work the culmination of prosthetic skill and artistic production came with the invention and perfection of procelain or continuous gums. After the introduction of vulcanite, the general disuse of metals made laboratory skill of little value, and hence it was neglected or ignored in the preparatory training of the student. The manufacturers supplied a great variety of instruments, so that the forging, shaping and tempering of instruments, became almost a lost art. The ease and facility of working of vulcanite not only called for little ingenuity and skill, but so obliterated the distinctions that the novice, after a few weeks of instruction and practice could compete with the most experienced, and this important and most beneficial branch became the refuge and ally of incompetence and quackery. The evils resulting from the wholesale extraction of good teeth were most deplorable and cannot be estimated. There has been grave doubt whether vulcanite in dentistry has been a blessing or a curse to the world. A superficial observer might contend that when organs so important to health were lost, it was a blessing that substitutes could be within the reach of all but those in abject poverty. But we know to what a shameful extent the harpies in our number, by appeals to cowardice and cupidity, despoiled the mouths of the confiding public of millions upon millions of strong and healthful teeth to make place for their bungling, disfiguring and filthy substitutes. It did seem for a time that the whole profession would be engulfed in a sea of obloquy. But the reaction happily came, the tide turned, and we can congratulate ourselves and the world that the danger is fast disappearing.

But the cause more important than any or perhaps all of the foregoing for the increase of laboratory skill and the retention of teeth and roots is to be found in the invention of the modern artificial crown and its corollary, the bridge. This is the distinctive improvement of the past twenty years. Within that period more than one hundred different crowns and bridges have been invented and published. The result has been two-fold. It has made laboratory skill of more importance and value to the dentist than ever before, and it has arrested the great "slaughter of the innocents," by making the retention of the roots of teeth in the mouth, obligatory. At various periods the separation of the two branches of practice has been urged by prominent men of each branch, but by these inventions the two branches have been bound together in bonds which seem indissoluble. The chief drawback to perfection in the past has been the inability of our art, however skillful, to permanently save some teeth. The inherent defects of structure or surroundings made the best operations but temporary, and these teeth had ultimately to be lost and substitutes applied. Now, after all the worst has happened, the root is still of inestimable value for crowning. This invention seems to place a climax upon our art.

In recent years there has been an increasing interest in the deeper causes of physiological function and of pathological departure from normality. Histological investigations have been pursued with great enthusiasm and thoroughness, and the advances in other departments of microscopic research are largely due to methods which were first devised and employed in the study of dental tissues by ingenious dental microscopists. These fields of research are inviting to the student, but demand great courage and self-denial when cultivated by those whose labours are severe and fatiguing in the daily routine of the office. We rejoice that there are so many dentists throughout the world who are devoting their energies, after the day's work is done, to these problems. We shall be encouraged as well as edified through the week by the display of results already achieved.

The theory of the bacterial origin of disease, and antisepsis, has engrossed much study and enthusiasm. It seemed that we were on the eve of a solution of all etiology by the isolation of the specific pathogenic germ of every disease, and that to prevent or cure all that was necessary was to ascertain and administer the proper germicide. Clinical records, however, have failed to sustain the ardent expectations of the more sanguine. The germicide has taken a place subordinate to a strict observance of absolute cleanliness, and we see acknowledged the importance of *vis vitæ* as a factor in securing immunity from the attacks of bacteria everywhere present. Light, however, is being shed upon many mysterious bacterial phenomena by a more thorough acquaintance with ptomaines, leucomaines, and the extractives which are toxic and auto-intoxicants. Fortunate practical results have come in the character of a great reform in the care of instruments and the sterilization of everything connected with operative work. All through the years there has been an underlying hope that improvement of tissue and greater resistive power would result from advances in prophylaxis. Apart from the improved conditions resulting from changed manipulation like contouring, or greater care in cleanliness, little has been accomplished in purely dental prophylaxis. Special feeding for the teeth or treatment in the line of therapeutics has not rewarded patient trial.

The tendency of prophylaxis to-day is to develop along physiological lines by more special and minute observance of the laws of hygiene. Proper food, its preparation for assimilation, out-door exercise, in a word, rational methods of living, are no more important for the preservation of health than for the building up of tissues throughout the whole body, of such perfectness of structure and function as to be able to successfully resist deleterious attacks. Thus viewed, prophylaxis has made great strides, in which the teeth have shared as part of the general economy. These topics and many others merit more extended consideration as factors of progress.

The Dental Review.

A PREHISTORIC DENTAL ANOMALY.

By A. L. BENEDICT, M.D., Buffalo, New York.

I wish to record an instance of supernumerary tooth occurring in a skeleton—presumably that of an Indian—which was exhumed from a knoll near an old Indian corn-field on the east bank of Canandaigua Lake. Part of one or two other skeletons had previously been removed by the owner of the farm. No other remains were found; but the gravelly subsoil had been disturbed in an area six or eight feet in diameter by the insertion of clay and sand to the depth of about four feet. Throughout this inserted soil, charcoal (mostly oak, with one pine-knot) and calcined stones were found. At another spot in the same knoll there was uncovered a fireplace, circular and spherically convex, about three feet in diameter. A section through it showed four inches of charcoal and an equal thickness of baked clay.

The skeleton lay on its left side, facing the west, the head pointing south. The arms were bent so as to bring the hands together near the face. The thighs were at right angles to the trunk, the legs fixed as closely as possible to the thighs. Judging from the development of the bones, the sutures, and the teeth, the skeleton was that of a medium-sized adult male in early middle life.

The supernumerary tooth was shaped like a stunted canine. The root, which was rounded off, projected slightly from the alveolar arch above the first right upper incisor. The crown lay in the anterior palatine canal, which was unusually large. This tooth was probably entirely hidden during life, though its possessor may have wondered what caused the little projecting knob under the gum. Certainly there was no caries or necrosis to indicate that a sinus led to either root or crown. The rest of the teeth were not remarkable, although some were decayed and a few missing. This case is in harmony with the observation that supernumerary teeth usually occur at the second dentition, in the upper jaw, and in connection with the incisors or canines.

Medical Reprints.

AMALGAM AS A RESTORER IN EXTENSIVE LOSS IN CORONAL SURFACES.

By D. W. B. **Sherman**, San Francisco, Cal.

A plea for the use of amalgam in extensive loss of tooth-structure at this late day would be entirely superfluous. This derided substitute has won for itself the just recognition it enjoys. Its invaluable aid as a tooth-conserver has received acknowledgment. As time goes on new possibilities for its use are developed, and secure for it even a higher plane in our estimation. In its valuable office of restoring contour and masticating surfaces, it is especially applicable to molars and bicuspids, and not only for the restoration of surfaces in these teeth, but in a measure for giving to the individual that extension of masticating surface which has been lost by the extraction of one or more teeth. We cannot but deprecate the fact that restoration of contour in amalgam work has not received the same recognition in its use that gold has for this purpose. We know that the restoration of a tooth to its natural outlines is the best thing for that tooth, and with the best gold work this is always attempted. Why should we fall short of this standard in our amalgam work? Why, if it is perfected practice in one case, should it be less so in the other? Just as complete restoration should be made with the one as the other, and he who is satisfied with anything short of this standard falls just so far short of putting that tooth into a condition for its greatest ultimate usefulness.

More attention in contour work has been given to the sides of the teeth than to their coronal surfaces. This is a mistake; not that less work of this class should be done upon the former, but that more should be done upon the latter. While complete contour in one case may reduce to a minimum the liability of the recurrence of decay, in the other case such completion materially increases the efficiency of these organs in their function as masticating agents—a desideratum of no small moment, as this is their chief end. A gold-worker will build up and contour his cusps, imitating nature as accurately as his skill will admit; but it is seldom that we see such in the amalgam line, the idea being that fulness constitutes a sufficiency, that a completely filled cavity is all that is necessary. For a perfect crushing of the food something more is requisite than a mere coming together and lateral movement of flat surfaces. The work is much more completely done if those surfaces are provided with sulci and cusps, and these perfectly antagonize one with the other in the opposing jaws. In this way the extent of masticating surface of a denture is increased. What can amalgam do to this end where some teeth are missing? In some instances, though not in all, it can do wonders toward such a consummation. Let a mouth present in which one or two teeth have been lost, and where those remaining have arranged themselves so as to leave considerable space between each tooth, and we have a case where amalgam can furnish more or less additional masticating surface.

In such cases, great annoyance comes from the packing of food between the teeth, necessitating, in proportion as one has nervous attributes, its immediate removal, or no comfort is possible in eating. The bridging of these spaces by amalgam from one tooth to another will accomplish both purposes. It must, however, be done rightly and with the proper grade of materials. At first one space was alone bridged, but we now have record of a few years' standing of such cases where two, or even three, contiguous spaces were so treated, and successfully, as the result has shown.

It is admitted that cavities must either exist advantageously placed or must be so made. A distal or disto-morsal cavity in one tooth must have as its counterpart a mesial or mesio-morsal cavity in the tooth next in line. Where it is desired to bridge over two contiguous spaces, the tooth between these spaces may be of almost any abnormal shape. A mere root can be utilized to good advantage as a pier to the bridge. When a tooth is normal conservative operators may, however hesitate to mar its natural outlines for this purpose. Let the urgency of the case decide this. An advantage secured many times in this operation is the support given to loose teeth, it being recognized in this direction that such loose tooth must stand between the space to be bridged, and the amalgam made continuous over this to ensure the best results; for a loose tooth at either end of the bridge would soon work itself free from a close adaptation with the amalgam, or at least the conditions for fracture of its walls would be present. For the successful accomplishment of such an operation two grades of amalgam alloy should be used. This is especially true where the decay has advanced near to or under the gum-line. Some good, recognized submarine alloy should be first employed, and the adaptation to the cervical margin made perfect.

Half of the cavity from the gum toward the periphery of the tooth should be filled with this grade of amalgam, and the bridge completed with any high-grade, heavily silvered gold alloy. Such an alloy is found in Flagg's "Contour." This grade of amalgam in its setting is firm, prompt, and dense, with excellent edge strength,—attributes which alone make possible the successful use of amalgam for bridging, and which give the successful plastic-worker such satisfaction in his work Distal and mesial cavities are prepared as though for simple filling, care being taken to leave no overhanging wall of enamel upon their sides, for this would be sure to fracture under the strain. After the submarine amalgam has been introduced to its proper level in the cavity, a small roll of chamois skin, suited in size to the space it is to occupy, is placed between the teeth and pressed down hard upon the gum which latter should have been previously treated by a cocaine application. Chamois skin is used in preference to cotton, as there are no fibres, and as it leaves a better finish to the amalgam surface.

The high-grade alloy is now worked in upon the submarine while the latter is yet plastic, and over the chamois to the submarine in the second cavity. Its hardening is hastened by pelleting. The application of the rubber-dam should have preceded the introduction of the filling material. The distal cavity should receive attention first, working from before backward, thus facilitating the work. Proper articluation with the antagonizing teeth is made after sufficient hardness is obtained and the dam removed. Caution should be observed in the closing of the teeth not to fracture the bridge, and the points of contact marked by articulating paper.

The tedious part of the operation is now at hand ; the making of the proper depressions to receive the cusps of the opposing teeth, and the rounding off of the cusps themselves. It is well to allow the material to harden thoroughly before it is removed. If the proper grade of alloy has been used, one half hour's time should give it ample scope in which to do this. The roll of chamois skin should be left until the patient is discharged, not longer,—as separation of the teeth might occur, and make futile our efforts. Two or more contiguous broken down teeth have been treated with good results, the satisfaction of the patient being manifest in a few days, after the novelty of the innovation has worn off. Objection to this operation may be made by its establishing pockets for the retention of the food. This objection is tenable, and if habits are slovenly in regard to the care of the teeth, may hold good; but where care is used and a toothpick kept at work it becomes of no importance.

If it is found that space enough was not left after the withdrawal of the chamois-skin, a few revolutions of the fissure bur will increase it.

It has been pertinently asked, What are the limits of the successful application of plastics? It is not yet time to answer that question.

The Dental Cosmos.

SURGICAL TREATMENT OF PALATAL DEFECTS.

By Truman W. Brophy, M.D., D.D.S., Chicago.

To consider the requirements of harelip and cleft palate patients, we take up:

1. *The Time of Life when Surgical Operations promise the Best Results.*

These operations should be performed in early infancy, the opinion of distinguished authors to the contrary notwithstanding. It is well known that many infants born with this defect die within a short time after birth, when the cleft is of a marked character. Mr. Lawson Tait says that one half of the children born with extensive clefts die from starvation within a few days after birth, and he thinks we might possibly save many of them if we could help them to suck by early giving them a roof to the mouth, and therefore advocates doing the operation for closing the hard palate as early as the third week. In the complication of harelip with cleft palate, the practice has almost invariably been to operate upon the lip, and allow the fissure of the palate to remain unclosed. This, in my judgment, is a mistake. The palate should be first operated upon, for various reasons:

1. The fissure of the lip enables the operator to gain a little more room in which to work.

2. The closure of the palate is an operation attended with greater difficulties in its performance; besides, the closure of the cleft through the alveolar process, if it exists, may be more surely accomplished when fully exposed to view through

the divided lip, than when covered, as it would be subsequent to the closure of the lip.

It is unnecessary to say that the bones are soft, and will easily yield in early infancy. The tissues unite kindly, and the shock following the operation is not so great if performed within the first month, as it would be later in childhood. It is a well known fact that the nervous system of a child is not so well developed in early infancy as it is later, hence one of the advantages of performing this operation before the nervous system has developed to a point which would subject the child to a more severe shock. The operation, therefore, should be performed as soon as the functions of the organs of the body are well established. This may be within the first week, or any time within the first month.

3. The child will be better nourished.

4. If performed, it will bring into action the muscles of the palate and develope them, whereas, if they are not thus put into use they will atrophy, and later it will be found, as is often the case, that there is insufficient tissue to restore the palate to its natural form. It is scarcely necessary to say that muscular tissue which is not subject to action and use soon becomes atrophied.

5. One of the most important reasons is, that the parts operated upon early not only develope well, but the child, when arriving at the age when articulation in the form of speech is attempted, finds that he can speak as other children do, and does not acquire the habit of articulating through the nasal passage, which is characteristic of this deformity, for the nasal accent when once acquired cannot be easily corrected. Fissures or clefts of the palate, not closed in early infancy, are almost invariably accompanied with pharyngitis.

6. Before the calcification of the bone is far advanced, and also before eruption of the teeth, the operation on the hard palate can be more easily and successfully accomplished; if made subsequent to the eruption of the teeth it is always attended with more difficulty, and the results are less satisfactory.

2. *The condition of the patient.*

The patient should be free from any of the diseases of childhood, and from specific inheritance. The bowels should be natural, the circulation normal, and the appetite usually good. It would not, of course, be wise to operate on a child who was the victim of a specific taint, or otherwise suffering from affections of the skin or blood. The patient should be deprived of solid food at least four or five hours prior to the operation, and but small quantities of liquid food should be given. The parents or guardians should be informed as to the extent of the operation, the possibilities of failure, and the advantages of success.

3. *Modes of Operating.*

The modes of operating are numerous. From the date of the first operation upon cleft of the palate, which was performed in 1764, by La Monier, of Paris, down to the present time, changes and improvements have been made. The method of procedure in the closing of the velum varies but little, but the skill of the operator has been taxed in securing proximity of the edges of the cleft of the hard palate. It was Warren who first proposed the elevation of the periosteum, and the approximation of the mucous membrane of the two sides to bridge over the osseous fissure; and it was Ferguson who proposed approximating the bones by lifting them and bringing them into apposition. In looking over the history of staphylorrhaphy, the reader will be struck with the likeness of complaints, the three principal of which seem to be the difficulty in tying the sutures, the great tendency of the sutures to slough out after they are once nicely secured, and the concealment of the parts during operation, both because of deficiency of light and the accumulation of the muco-saliva, which in mouths thus affected is secreted in great abundance.

In my judgment, it is sometimes best to divide the operation into two stages, making first the operation on the hard palate, and subsequently, after the process of repair is complete, an operation on the soft palate. If, however, the operation is to be made on both the hard and soft palates at the same time—and this is sometimes admissible—the edges throughout the entire length of the fissure should be first prepared. The operations that have been performed by Ferguson, Warren and others on the hard palate, have their advantages, and are oftentimes commendable in cases of adults, but in early infancy the new operation for the radical closure of the hard palate as devised by me will now be dealt with. The operation for the closure of cleft palate is one more or less dreaded by the general surgeon, both on account of tediousness, and the not always satisfactory results. My operation is as follows:

First, place the patient on the table with the face toward he light, introduce the oral speculum and vivify the edges of the fissure; do it thoroughly, and with a bold hand. A mere scraping of the mucous membrane will never suffice to bring about union which will be permanent and satisfactory. On the hard palate trim the opposing surfaces of the bone as well. If this is well done it will secure a sufficient exudate to make the operation a successful one, in this respect at least. The knife will easily cut through the soft bone of the hard palate, and the alveolar process of young patients. Then raise the cheek well back towards the posterior extremity of the hard palate, just back of the malar process, and high enough to escape all danger of not being above the palatal plate of the bone, insert a large braided silk suture, carrying it through the substance of the bone, so that it will come out at a corresponding position upon the opposite side. The silk suture is more easily introduced by the needle, but a wire suture of silver should be substituted for it, and drawn through in its place, and this wire may be doubled in case the condition of the parts and the tension upon the tissues necessary to approximate them seem to require it. Nearer the front portion of the palate insert another wire, carrying it through the substance of the bone above the palatal plates, and out through the other side in a position corresponding to the place of entrance. Thus we shall have one wire passing over the palate in front of the malar process of the bone, and another behind it.

The next step is to take a lead button, moulded to fit the convexity of the part, and long enough to pass beyond the exit of the wire sutures, so that they will pass through it. Have it provided with eyeholes, through which are passed the protruded ends of the wires upon each side; twist them together—that is the right side end of the anterior wire, and the same on the left. It is better practice always to twist wires in one way, either from right to left, or from left to right. These are heavy tensioned sutures, and once approximated, the parts cannot be separated by the patient.

If we are unable to close the fissure with these wires, if from lack of tissue or from firm resistance of the parts it cannot be done, there is a further method to be employed which will obviate these difficulties. With your knife, after the cheek is well raised, divide the mucous membrane just over the malar process. Here insert a knife in a horizontal direction, and when well inserted, sweep the handle around from one side to the other, as from behind forward. In this way a maximum amount of bone is divided, and a minimum amount of the mucous membrane. This done on each side, the bone can very readily be moved toward the middle line. Having thus divided the bones upon either side, the wire sutures passing through the lead buttons may again be twisted, and the cleft of the hard palate will be easily closed by approximation of the two sides. The incision in the mucous membrane in making the separation of the bones is as small as possible, for the reason that this membrane must serve to retain the bones in proximity, or to hold them nearly together. If, after the parts are approximated, they are kept antiseptically clean, the bones will kindly unite, and the palate will be restored, so that its full function will be performed. Separation of the bones is attended with little hemorrhage, and the parts do not usually cause more inconvenience to the patient than the ordinary operation of lifting the hard palate according to the practice of Ferguson.

The germs of the teeth are sometimes disturbed, as I have found later, when they are erupted, that certain teeth were imperfectly formed. This applies only to the molars of the temporary set, but it is not unlikely that the germs of the permanent teeth may also be disturbed, and the teeth made imperfect by this procedure. The palate, too, may be contracted to an abnormal extent; and yet it is a well known fact that the alveolar process developes with the eruption of the teeth, and my experience has convinced me that in mouths thus treated, the teeth of the upper antagonize in a normal way with those of the lower jaw. If, however, the upper superior arch should be abnormally contracted, and when the teeth erupt fail properly to antagonize with their fellows of the lower jaw, the means well known to the modern dentist may be employed by which the arch can be expanded, and the slight abnormality removed.

After the approximation of the edges in the manner I have described, the parts should be thoroughly dried, the edges of the wound carefully examined, and if need be some fine sutures inserted here and there to ensure perfect co-aptation of the parts. The after-treatment is very simple, consisting solely in antiseptic cleanliness, nourishing of the patient upon liquid food, the prevention of disturbance of the parts by the child, or of the introduction into the mouth of anything that might interfere with the sutures. Abrasions of the mucous membrane caused by the buttons need not disturb the operator for they are usually slight. So much for the operation for the radical closure of the hard palate. The soft palate may be closed in the usual way, and it may be best accomplished by the use of a needle invented by Dr. Prince, of Jacksonville, Illinois, with Dr. Black's "pick-up," which simplifies the operation and renders its performance easy. I regard silver sutures as the best.

I particularly desire to enter a protest against the division of the tensor palati muscle, so frequently severed by surgeons with a view to relieving the tension upon the palate, and thus rendering its union more certain. This muscle once divided will never unite, as a retraction of its fibres will instantly occur after its division, and we have consequently one of the most important factors in the anatomical structure of the palate destroyed. The tension upon the fleshy approximated surface or edges of the wound of the palate may be relieved in another, and what I consider a far better, way,—better because the functions of an important portion of the palate is by this means not destroyed. It consists in passing a wire through the borders of the tensor palati muscle, as it passed around the hamular process of the palatal bone, and fixing the loop with a large bead res-ing upon the visible surface of the hard palate, directly over the tensor palati muscle. The wire passing through the bead and muscle is carried also to the opposite side, and thus pressure is brought to bear upon the fibres which will temporarily paralyze it and thus remove the tension from the fleshy approximated surfaces of the palate. After the process of repair is complete and this tension suture removed, the muscle will soon resume activity. It must be remembered that a surgical operation to be a success must leave the patient with sufficient palatal tissue perfectly to close the posterior naris during articulation. An operation may be surgically a success, but if there is insufficient tissue to close the naris in the articulation of sound, it will not be a physiological success.

Where there is insufficient tissue in young persons and adults to secure the closure of the posterior naris by operating the correction of articulation is best accomplished by means of artificial vela; but whatever method of treatment of congenital cleft palate may be adopted, improvement in the voice must to a very great extent be gained by education. The patient has in the first few years of life acquired imperfect habits of speaking, particularly in assuming the guttural and nasal tone, which requires great care to overcome. It is essential that he should be taught to speak with his lips and to throw the voice forward. With proper teaching and diligent practice he will in time speak as distinctly as the majority of persons whose palates are normal.

The Dental Practitioner.

DISEASE IN THE ANTRUM.

By J. B. Van Fosson, D.D.S.

The case to which I wish to call your attention, was one I had in practice a few months ago. The patient was a lady, about forty-five years of age. The first time I saw her was during the summer, and at that time she complained of a dull heavy pain on the right side of her face, just below the eye. There seemed to be a slight swelling. I examined her mouth and advised her to have all the teeth in the upper jaw removed which was done. The tooth that seemed to have made the trouble, was the first upper molar, and I remember I had some difficulty in taking it out. The tooth was free from decay, and the only one that was in a good state of preservation. In six weeks she called again. Her face was badly swollen, and she informed me she had been confined to her bed most of her time since I removed her teeth ; her physician treating her for I don't know how many things. On examining her mouth I found the opening where I had removed the molar tooth had not healed, and there was a small teat-like substance hanging from the opening, resembling gristle in structure. I removed it with some difficulty, but there did not seem to be any discharge. I, at once, mistrusted the cause, but, as I had nothing to treat it with, I plugged up the opening with a piece of cotton rolled hard and moistened with oil of eucalyptus and dismissed the patient, requesting her to call the next day. On her return I took one of the largest sized "rose burs" and drilled through till I struck the floor of the antrum—making a good free opening. I then had the patient bend well forward over a large washbowl, and with a small rubber syringe I washed the cavity thoroughly, using as much force as I could in throwing the water into the antrum. I soon had a good discharge, most coming through the nose. The discharge was at first quite black but free from odour. After washing with warm water, I threw in peroxide of hydrogen and then a four per cent. solution of boracic acid. After using the peroxide, the patient would complain of a stinging sensation for some time, and, I think, had I not had such a good opening it would have been better not to have used so much of it. Before dismissing the patient I was each time careful to cork the opening, to keep the secretions of the mouth out. I followed this treatment every day for about a week, without seeing any change. I then increased it to three times a day, and followed this up for about two weeks, at the end of that time I could scarcely detect any discoloration in the discharge. I then treated it once a day for a week, and then twice a week. It was but a short time before it commenced to heal—all pain subsided, swelling disappeared, and the patient got well. Could I have caused this disturbance extracting the tooth?

Dental Register.

Reports of Societies.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

The last meeting of this Society was held on Friday, November 3rd. Mr. W. Rushton, President, in the chair.

The minutes of the previous meeting having been read and confirmed, the President gave the usual welcome to the visitors present.

Mr. Masters and Mr. Worsley were unanimously elected members of the Society, and Mr. E. A. Wheeler, Mr. C. Fox, and Miss Halliday were proposed for membership, to be balloted for at the next meeting.

CASUAL COMMUNICATIONS.

Mr. E. J. **Carter** presented to the Society a second left upper bicuspid with three well-formed roots.

Mr. **Humby** showed two upper molar teeth which had been filled with Sullivan's amalgam, one of which showed marked attrition, and the other showed attrition and disintegration of the stopping and breaking down of the tissue, at the cervical edge. He had noticed this breaking down and disintegration at the cervical margin in a great many teeth filled with Sullivan's amalgam, and would strongly advise students not to use it, as a stopping that gives way at the cervical edge is perfectly useless. He thought it was very useful for making small models with, but condemned it as a stopping for teeth.

The **President** suggested that perhaps the breaking down at the cervical edge was due more to the operator than to the filling, and said that he had a Sullivan's amalgam in one of his own teeth for many years, and was in hopes of its lasting many more years. He hoped that, as it was a subject which concerned us all, Mr. Humby would bring the subject again before the Society at the next meeting.

Mr. **Humby** promised to do so, and said that he would bring a series of teeth from among his collection, which he thought would convince the members as to the defects of Sullivan's amalgam as a stopping.

Mr. **Jenkin** showed a number of specimens of Mr. Rose's continuous gum work, also the various forms of the same, showing its adaptability to almost anything that was required, from a partial case to a complete upper and lower set. Some of the specimens were mounted on a vulcanite base, and one was a complete upper on a platinum base, the palate being entirely covered with the mineral and gum enamel; another specimen showed a case with removable teeth. These beautiful specimens were all very much admired.

Dr. **Maughan** communicated a case of Extended Alveolar Abscess, a report of which we publish on page 1015. The patient was present for inspection.

Mr. **Humby** said that in a case of cervical abscess the results of a dead tooth, he thought it most important that the tooth should be removed at once in addition to any other treatment found advisable. He recalled a case he had seen at the hospital, where the abscess had opened at the upper border of the clavicle.

The President then called upon Mr. Reeve to read a paper on "Contour Vulcanite Work," which we publish on page 1009.

The paper was illustrated by numerous specimens demonstrating the processes advocated, and the different stages of the work.

Discussion.

The **President** asked Mr. Reeve if he made his pieces as thin as the wax he passed round, and whether the vulcanite which he covered the bands with was not likely to peel off.

Mr. **Humby** said that the application of silicate of soda was entirely new to him, and the result far surpasses any thing of the sort he has ever seen for the production of a contour surface. He thought that the rugæ as obtained by the second method were too accurate, making the markings on the palate too pronounced. He did not think it advantageous to have a too accurate representation of the rugæ, because in the mouth they were soft and yielding, whereas vulcanite was hard and unyielding.

With regard to bands being covered with vulcanite, he used white rubber for the purpose and never had it peel off. He thought that if the junction between the band and plate was left bare, it would obviate any tendency to peel off.

Mr. **Farmer** said he was very pleased to have heard the paper, and had been enlightened on several points, and would take an early opportunity of trying them.

Mr. **Greetham** said that he had done contour work with the steam swager since its introduction by Mr. Humby. He had also tried the silex method, but had discontinued it, as he thought the steam swager gave the best results. He said that he always thoroughly cleansed and polished the polishing plate, and by this obtained a very fine surface which he did not think could be obtained in any other way. Another reason why he preferred this method was because vulcanite that was cooked between metal surfaces was of a denser character.

With reference to bands being covered with vulcanite, for this purpose he uses the white edge of Gear's shaded pink rubber which is a mixture of pink and white.

Mr. **Reeve** having replied, a very hearty vote of thanks was accorded to him for his instructive and very interesting paper, and the meeting then adjourned.

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

The Council of the above Society, in their determination to introduce the social element to at least a few of their meetings, decided to hold a reception for members and their friends, in place of, and as a substitute for, the Inaugural Meeting of session 1893-94. Accordingly a reception was held in the Masonic Room of the Grand Hotel, Aytoun Street, on Tuesday evening, October 31st, at 7.30 p.m. The guests were received by the President, F. W. Minshall, Esq., and the various officers of the Society. The attendance was very large, and the bright dresses of the ladies gave the well decorated room a brilliant and pleasing aspect, which served to dispel the formalities of such occasions.

A well arranged programme of music was commenced at 8 o'clock. Songs were given by Mrs. Rodway (soprano), and Miss Lloyd (soprano), Messrs. Norbury (tenor), Barri, Wilcock (baritones), and Mr. Robinson (bass).

Mons. S. Speelman, the eminent Manchester violinist, rendered two exquisite pieces, Mr. Leather kindly favouring with the accompaniment. Mr. Rose delighted his audience with his comic songs, while Mr. Luigi Centenari won applause by his skilful rendering of the introduction to "Cavalliera Rusticana." Mr. R. H. Minshall favoured the company with two humorous recitations.

During the interval, refreshments provided by the Society, were served in an anteroom.

The success of the evening's entertainment was universally acknowledged, and will probably induce the Society to repeat the experiment on some future occasion.

Dental News.

HEAVY DAMAGES FOR A DENTIST.

Queen's Bench Division, November 10th. Before Mr. Justice Mathew and a special Jury. Stringfield v. Great Eastern Railway Company.

In this case, Mr. George William Stringfield, a surgeon dentist, of Lowestoft, sued the Great Eastern Railway Company, to recover damages for personal injuries sustained by him in a collision which occurred on the Company's line on Christmas Eve, 1891, at Barnby, a place between Beccles and Lowestoft, in which three people were killed and several injured. The Company did not deny their liability, and the only question was the amount at which the damages should be assessed.

The plaintiff's case was that he had sustained such injuries as confined him to his room for five months; that he was still unable to work; and that he was advised by his medical men that he would not be able to work for six or twelve months. He acted as an assistant to his father, and received £250 a year for his services, and had hopes of being taken into partnership. His expenses for his illness, including doctors' and other fees, amounted to £600.

For the defence it was contended that there was no evidence that the partnership, if ever contemplated, had been abandoned; that there was no strict proof as to the salary; and that the amount charged for extras and change of air was excessive.

Medical evidence was also called to prove that in about six months the plaintiff would be sufficiently restored to health to resume his duties.

Mr. Kemp, Q.C., and Mr. Poyser appeared for the plaintiff, and Mr. Lockwood, Q.C., and Mr. Boyle for the Company.

The jury returned a verdict for the plaintiff, with £2,400 damages. Judgment accordingly.

A NEW RUSSIAN DENTAL SCHOOL.

A new dental school was opened in St. Petersburg, on September 25th, by Frau Vongel. The new school is under the control of the Ministry of the Interior, and the immediate supervision of the St. Petersburg Medical Administration.

Dr. Arronet had been entrusted with the organisation of the school.

THE INCORPORATED EDINBURGH DENTAL HOSPITAL AND SCHOOL.

The Session, 1893-94, of the Edinburgh Dental Hospital and School, was opened last month. There were fourteen new students as against ten last October. The total number on the roll is at present thirty-five. It is expected that the new premises will be ready before next session.

A BAD TASTE IN THE MOUTH.

It must have given our foreign friends a singular idea of the ethics which prevail in Chicago, when upon the back of a menu in a cheap restaurant they found the advertisement of a dental college that is represented in the National Association of College Faculties and which is located in the same building. It commenced: "Go to the Oporating Parlour of the American College of Dental Surgery, on floor above. Your teeth will receive careful and proper attention at a very moderate cost."

It was probably anticipated that the tough steaks of the restaurant might be suggestive of the dentist, and hence it was well to call attention to the proximity of a school of dentistry. But what an example to set before a class of students. We hope this is not a sample of the ethical instruction given in that college, or we might expect them to turn out advertising quacks to a man. If the college in question has any self-respect, or regard for professional interests, it should withdraw such advertisements, especially during the sessions of a World's Dental Congress.

The Dental Practitioner.

A DENTIST'S REPRESENTATIVE CHARGED WITH EMBEZZLEMENT.

At Bromley (Kent) Petty Sessions, Edward Victor Leon' of Beckenham, was charged with embezzling certain sums of money received on behalf of his employer, Mr. Phillip, of the American Dentistry Association. The prosecutor, who lives at 6, Grosvenor Street, London, and carries on business at various places, had engaged the prisoner for three years from February 10, to attend his branches at Bromley and Beckenham. For the first year, the prisoner's salary was to be £2 10 0 per week, for the second year £3 per week, and for the third year £3 10 per week.

Evidence was given by four customers with regard to payments, which it was alleged had not been accounted for, and the prisoner was committed for trial, bail being allowed—prisoner himself in £100, and two sureties of £50 each.

APPOINTMENTS.

Mr. Edward Mawer, L.D.S.I., has been appointed Honorary Dental Surgeon to the High Wycombe and Earl of Beaconsfield Memorial Hospital.

Mr. L. B. Eskell, L.D.S.I., has been appointed Honorary Dental Surgeon to the Eastern Dispensary, Bath.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291 Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

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THE EXCLUSION OF SALIVA.*

By HERBERT W. KAISER.

Mr. President and Gentlemen,—The subject which I have chosen for my paper to-night is, although rather limited, a very important one in Dental Surgery, for we all know that to insert fillings of any permanency whatever, the exclusion of saliva is absolutely necessary.

The salivary glands consist of three pairs,—the parotid, submaxillary, and sublingual. The parotid is the largest of these, and is situated on the side of the face between the ear and the lower jaw, and its duct, termed the duct of Steno, passes over the masseter muscle, runs obliquely through the buccinator muscle, and enters the mouth by a narrow opening opposite the second upper molar. The submaxillary lies beneath the horizontal part of the inferior maxilla, and its duct, known as the duct of Wharton, opens in the floor of the mouth at the side of the frænum of the tongue, and close to the duct of the opposite side. The sublingual, the smallest of the three, is found beneath the tongue, and discharges its secretion by a number of small ducts, (from 8 to 20), termed the Rivinian ducts, some of which along with one larger one, called the duct of Bartholin, unite with the duct of Wharton.

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*Read before the Students' Society, Liverpool Dental Hospital.

Of the various methods at our disposal for the exclusion of saliva, the napkin, rubber dam, and saliva ejector are those most commonly employed,and,in conjunction with the first two, clamps, ligatures and various other accessories are sometimes necessary. At a later stage, I will call your attention to the use of bibulous paper and rolls, cotton-wool and rolls, chloro-percha and pipe-clay disks.

Before entering into details, however, I will give you a short account of the history of the Exclusion of Saliva. It may be stated as a fact that until after the introduction of gold foil, absence of moisture from a filling was not, as now, considered of great importance. The older dentists had to be content with the use of lead and various gums, the lead being inserted very much in the same manner that non-cohesive gold filling is at the present day. The napkin was probably the only method used in the exclusion of saliva for a long time. A great change, however, took place in 1850, and from that time we can trace nearly all the appliances of the present day. Tissue and bibulous paper were recommended in that year, and Dr. Dwinelle, of New York, describes his method of operating with a wax coffer-dam built around the tooth. In the same year we first find mention of an ejector which, it is said, resembled a miniature fife, and was attached to the under jaw to collect the saliva. Another was introduced in 1866, and this being improved upon resulted in the Fisk ejector, which is now, I believe, much used. In 1856, the hot air blow pipe was introduced in substantially the same form as the one at the present day, and eight years afterwards concave disks of porcelain which have now given way to the same of pipe clay were brought forward. It was not, however, until 1864 that Dr. Barnum, of New York, introduced the now well-known rubber dam, which is universally conceded to rank with the greatest advances in the material of operative dentistry.

I have given you a short history of the subject of my paper to-night, and will now treat in detail the various methods for the exclusion of saliva.

The Napkin.—The napkin should be about 12 inches long and 9 inches broad, fairly thin, but of firm texture. It is generally employed during the preparation of cavities in order to secure better light, and to exclude moisture by compressing the adjoining ducts. In the filling of the temporary teeth, and where the cavity is small, the use of the napkin is very effective. There are various methods for inserting it into the mouth, each of which has its own merits. Mr. Tomes says, that in applying the napkin no two operators will adopt precisely the same disposition of it, and it would therefore, I think, be unprofitable for me to devote much space to a description of what can only be taught by demonstration. There are, however, two methods generally recognized as suiting most cases. For the upper jaw, the napkin is folded from a corner once, or even twice, so as to present a doubled edge, and this portion is introduced into the sulcus between the cheek and the gum, the pointed end being brought forwards, the thickened end, which is passed behind the molars, being spread out over the chin. For the lower jaw the folding and application is practically the same, but the thickened end is to be well pressed into the floor of the mouth, and then the tongue will tend to keep the napkin in position. Occasionally to secure it firmly a clamp may be used with advantage, the napkin being caught against the labial and lingual sides of the tooth. A good method for preventing the napkin becoming saturated with moisture is recommended by Mr. Ackery. It is that of placing in the folds a thin sheet of rubber dam. If the rubber is used, the side of the napkin against the tooth will be kept practically dry for a considerable time. I cannot conclude my remarks here without saying that many students are inclined to think that the napkin is quite sufficient to exclude saliva during the insertion of amalgam or oxyphosphate fillings. Whenever practicable, th rubber dam should always be employed, and this holds good in the majority of cases, the only exceptions being those previously mentioned, viz, temporary teeth, and where the cavity is small.

The Rubber-dam.—The rubber dam is by far the most perfect method for the exclusion of saliva, and with its aid we can conduct operations,—gold contours, for instance, which under other circumstances would be impossible. The perfect application of the rubber dam is only to be learnt by long experience. In approximal and other cavities of the incisors, the piece should be about six inches square, and with the tooth to be operated on, there should be at least one tooth on each side included in the dam. In some cases where the teeth are small, it is necessary to include two, or even more on each side. For punching the holes three methods are at present in use. Firstly, stretching the dam over the blunt end of an instrument and touching it with the point of a sharp excavator when a small round disk will fly off. Secondly, by folding the dam into four, and cutting off a corner coinciding with the position of the tooth. Thirdly, by punching the holes with the instrument specially manufactured for the purpose. Before perforating, however, the position of the teeth should be accurately gauged, and this can be accomplished by laying the dam over the teeth, and stretching it so that the incisive ends show through, slightly scratch the dam with an excavator, and this will produce a whitish dash. The annoyance of finding that the holes are too close together or too far apart will then be done away with. A difficulty is sometimes experienced in forcing the dam between the teeth. This can be remedied either by wedging the teeth, or by carrying the dam down by means of a piece of waxed floss silk. If tartar is present or the edge of the cavity is rough, there is a danger of the dam being cut, when it is being forced up. A safe sided saw or emery strip will generally remove the obstacle. As soon as the rubber is in position the retractors are put on and ligatures applied, to force the dam well beyond the margin of the gum. A four per cent. solution of freshly prepared cocaine painted on the gum, will do much to alleviate the pain which nearly always accompanies the operation of ligaturing. The silk is passed between the teeth, well pressed below the cingulum with a flat burnisher and tied in a surgeon's knot. In some cases, however, great difficulty is experienced in keeping the dam from slipping down, this is especially noticeable in peg-shaped teeth; also in those incisors where the cingulum is nearly or entirely absent. Mr. Smale in his book on Diseases and Injuries of the Teeth, gives a very excellent method for overcoming this tendency is to apply the ordinary clove hitch and exercise traction on each end alternately. In applying the dam to molars and bicuspids of the upper and lower jaw, clamps and ligatures are required, the clamp to prevent the dam being forced off the tooth by the action of the cheek and tongue, and the ligature to tuck it well under the margin of the gum. The clamp should always be placed on the most distal tooth, if the rubber is being applied to more than one. Two methods with regard to the dam may be employed. Firstly, it may be placed in position and the clamp applied afterwards. Secondly, the clamp may be partially passed through the hole in the dam, and clamp and dam be put on to the tooth at once. Festoon clamps are sometimes exceedingly useful. A distal cavity in the canine, when the tooth stands alone and the decay extends below the cervical edge, is generally an awkward position for restoring the contour with gold, and it is here that the festoon clamp's usefulness is displayed to the greatest advantage. Leakage may occur with the dam from various causes. The hole for the passage of the tooth may have been punched too large. The only remedy for this is, to cut the holes so small that they will only just escape tearing when stretched over the tooth. Another manner in which leakage is produced is, that in cover two or three teeth the holes have not been placed far enough apart. In this case the rubber must be removed, and a fresh start made, care being taken to correctly gauge the distance between the teeth. An instrument may slip during the insertion of a filling, perforate the dam, and through this tear the saliva comes. Dip a piece of sponge in sandarac and force it into the hole. The same thing may be accomplished by making a button from a piece of orange or other wood, and plugging the hole with it.

The Saliva Ejector is used in conjunction with the napkin and rubber dam. It is very effective during long operations; many patients being quite unable to get rid of the accumulation of saliva which in some cases is very large. Numerous ejectors are in use at the present day, but they are all much the same in action, suction being exercised in a flexible india-rubber tube terminated by a glass or nickel mouth-piece, by means of a fall of water down a vertical tube. The ejector is, I believe, now in use at all the principal dental hospitals.

Bibulous paper and rolls.—Many dentists, instead of the napkin, use bibulous paper or rolls for damming up the saliva. It adheres to the mucous membrane, but absorbs moisture very rapidly. For short operations it is frequently a good plan to stuff one or more of the rolls into the sulcus, thus covering the opening of the duct. A clamp with side clips for holding the rolls has recently been invented.

Cotton wool and cotton rolls are used much in the same manner as the bibulous, the advantage being, however, that cotton does not absorb moisture quite so quickly as bibulous

Chloro-percha.—This is sometimes useful to stop the weeping of mucus from the membrane overhanging the cavity. The gum should be wiped as dry as possible before application.

Pipe-clay disks are sometimes employed. It is well known that a fresh clay pipe will stick to the lips. The disk, of the same material, is placed over the orifice of the duct of Steno, and shuts off that important flow of saliva for a considerable time.

INAUGURAL ADDRESS.*

By Mr. E. J. PHILLIPS, L.D.S., M.R.C.S., L.R.C.P.

Gentlemen,—The vacation being over, which I hope you have all enjoyed and derived benefit from, it is with great pleasure that I again address you at the commencement of another year of work. I look upon this meeting as one to be remembered in the records of the Society, for since we last met changes have been taking place which will, I trust, strengthen us in our work and give those who enter earnestly and heartily into it, the best opportunities of preparing them selves for the task than lies before them after they cease to be students. As far as the Society is concerned, we have to the best of our ability revised and improved our rules, with a view to carrying out work upon the best lines, and offering inducements to all to engage in the reading of papers, and free discussion, both of which, if entered on thoughtfully, make men attend more than they might otherwise do to reading. Practice is essential, but reading is indispensable, if we wish to be progressive ; he is a poor student or practitioner who only knows and believes in one, namely, his own, method, and to write a good paper or be a good debater one must not only have worked out his own ideas, but must also have well learnt and have in his mind and at his tongue's end all the ideas of past and present workers.

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* Delivered before the Liverpool Dental Students' Society, Oct. 20th, 1893.

Besides this, our numbers have been steadily increasing, which is a good augury, but it has entailed new responsibilities, not on the Society, but on the Staff and Committee; it was found that the accommodation was not sufficient, and therefore these two bodies met, consulted and agreed that the time had come when it was necessary to enlarge and alter the Hospital, so that not only the wants and demands of the public could be met, but also that those of the Students should not be neglected, and after careful deliberations a scheme was proposed and endorsed, under the kind and able direction of Sir James Pool, Chairman of Committee of the Hospital, assisted by our valued and energetic Dean, (Mr. Edwards, and Dr. Waite, whose knowledge of dental matters political and otherwise, is so well known, and whose interest has never flagged in anything that tended towards the welfare of the profession,) as well as by the other members of the Staff and Committee, the outcome of which is that we are adding new rooms for operative work, re-arranging others, getting new additional furniture, chairs, &c, making new and perfect sanitary arrangements both for Students and patients, and we hope also favourable conditions for the renewal and continuance of our lease from the Corporation. I have put this, which represents a great deal, into very few words, but what I should like to impress on you is that there is some thing about it that concerns you all as students very much, namely,—here is your field for work, and though, of course, much has been carried out for the public good, quite as much has been done for your ultimate welfare, and on you largely depends the success or failure of this Hospital as a public institution and teaching centre. Remember that teachers cannot do all, they must be aided by willing learners, nor can the Committee gain the support of the public, i.e., those of them who help to maintain the Hospital by means of subscriptions and donations, unless by your work you prove it to be worthy of support; therefore as President of the Students' Society and also as a member of the Hospital Committee I beg you all to try your utmost by good conduct and work to help those who are trying to help you. Remember that success in practice does not entirely depend upon making your work look perfect, though all should strive not only to make it look so, but to ensure that it is, at any rate as far as possible. Also, and this I wish to strongly emphasize, in your behaviour to patients; most of you know me well enough to be aware that I only speak for your good, so I do not hesitate in repeating this little bit of advice, which I hinted at last year,—keep in mind that now is the time when you not only learn your work, but also learn to form your professional manners, and do not forget that kindness, consideration and politeness are due to all patients from the poorest upwards. If you act upon this advice and do good work you will always have the support and respect of your patients, but if roughness in manner or work are indulged in during student life, those doing so will have ample opportunities for regret later on.

Before sitting down I should like to give a few hints to you as regards your work. Make a point of reading up in any or all of the books on the subject everything in connection with the practical work you are engaged in at the time, such as extraction of teeth, fillings of various kinds, and the treatment of the numberless abnormal conditions to be met with in the mouth, also accustom yourselves to writing prescriptions for dentifrice powders or fluids to meet different cases and do not neglect Dental Therapeutics; also take every opportunity at this or any of the general Hospitals of watching the administration of anæsthetics and learning how to administer them yourselves, always reading the subjects up thoroughly; only practice under skilled direction will teach you how to give such agents, but it is necessary that you should know the composition, method of manufacture, and chemical and therapeutic properties of them, paying the greatest attention to their influence on the nervous and circulating systems, and to the ways of combating any untoward symptoms arising from their use.

Now, gentlemen, I think I have trespassed on your time and patience as long as I have any right to do, I will therefore conclude by saying that some of the work done by students of this hospital does great credit both to their teachers and to themselves: some has been very perfect and all that is needed is a longer experience to enable them to do the same work in a shorter time.

Gentlemen, I welcome you all back again and wish both you and the society every possible success. I also wish to thank you very sincerely for making me your President, and to assure you that during my term of office I will endeavour to fulfil my duties in a way that will show I both value and appreciate the honour and responsibility you have given to me.

TWO CASES OF DEATH DURING PENTAL NARCOSIS.*

From the new General Hospital in Hamburg.

By Dr. C. Sick.

Case I. occurred in connection with an operation upon a healthy, powerful navvy, aged 27, whose crushed left forefinger was to be amputated under pental. The pental (16 c.

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* Communicated to the *German Medical Weekly Journal.* No. 13, 1893.

c.m.) was covered with waterproof material, poured on the inner side of a small Esmarch mask containing sponge. Anæsthesia followed entirely without "Excitation," so that the operation could be finished after two minutes.

When the mask was taken from the patient's face, the eyes were opened, pupils tolerably wide. Suddenly the breathing became worse, the patient became cyanotic and respired only once deeply ; then the breathing ceased entirely. With the cessation of breathing the pulse was imperceptible.

In spite of artificial respiration, compression of the heart, tracheotomy and blowing in of air, *Exitus letalis* followed.

The post-mortem report corresponded to the suffocation observed.

Case II. happened in the case of a girl 18 years of age who had formerly taken chloroform and bromathyl, and this time was to have pental for an iodide injection as treatment for existing coxitis.

Half a minute after the commencement of the Pental inhalation, consciousness was lost. After about one minute the slight operation ended and the narcotic was suspended. Soon slight dyspnœa appeared.

Frequency of pulse not increased; short continuing Trismus alternately with stertorous breathing. Pupils dilated ad maximum, corneal-reflex extinct, pulse small, respiration shallow and ceasing. Artificial respiration and ether injection resulted in many spontaneous respirations in the ensuing quarter of an hour, during which the cyanosis relaxed, to immediately reappear at the discontinuance of artificial respiration. During the artificial respiration the pupils contracted noticeably. After three quarters of an hour some spontaneous respirations followed, without the cyanosis disappearing;compression of the heart and intravenous injection of saline solution were followed by only a transient improvement. After 2½ hours in spite of tracheotomy, heart compression, hot bathing, and artificial respiration, death occurred. The post-mortem examination threw no light upon the cause of death. The author therefore felt in the absence of other diseases and changes, that he must ascribe the cause of death to the operation of the pental, and he warns against the further use of pental as an anæsthetic.

ERUPTION OF AN UPPER CANINE TOOTH AFTER THE SIXTIETH YEAR.*

By Dr. L. A. Weil.

The occurrence of a very late eruption of teeth in man is, in itself, not so rare as to justify a detailed publication, but the complication in the following case may warrant it. Mr. — had for about twelve years before he came under my treatment the following teeth in the upper jaw;—two central incisors, right lateral and first bicuspid, left wisdom. The bicuspid stood close to the lateral and the canine was apparently missing. The teeth were normal except for two ordinary fillings, though most were wanting, having been lost by alveolar absorption. About four years ago the patient came complaining that the lateral and bicuspid were also loose; it was not however the usual form, but both teeth inclined forward in a labial direction. The bicuspid was so loose that I was able to remove it with my fingers. The lateral was tolerably firm. The saving of this and the few remaining teeth, was laid before the patient, and he agreed, on my advice, to have some artificial teeth.

After he had worn them a few months he came again because he had a constant feeling as though the piece was pressing into a swelling. Examination now showed a palatal swelling behind the lateral so that I at once pronounced the opinion that it was connected with the retarded canine. The patient refused to continue to wear the piece. After some months the swelling had apparently enlarged and the patient complained for a time of increasing sensitiveness of the swelling, of pressure, of even throbbing pain, in short with all the symptoms of a periodontitis. It could certainly be felt that a tooth was concealed in the jaw, and in an oblique direction.

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* Translated from the *Vierteljahrsschrift fur Zahnheilkunde.*

The condition was sometimes more, sometimes less intense until in about two years the point of the canine had erupted. By palpation and examination with a probe, I accurately ascertained the inclination of the tooth, and that the labial surface of the crown was directed towards the oral cavity. But at the same time I could make out a carious cavity on the palatal surface of the crown which lay in the upper jaw, still covered by the gum. I was easily able to penetrate the pulp chamber and nerve canal, from which much matter was immediately discharged. The tooth was under the mucous membrane and in an abnormally formed socket, and had not only become carious but was affected by periostitis. After opening the pulp chamber and evacuating the contents, the pain was relieved, but the lateral was pushed forwards in the same loosened mass in which the canine developed; so I advised the patient to have the canine extracted in order to save the lateral. With his consent I removed the tooth by means of a root forceps, which I forced into the alveolus, and grasping the tooth laterally turned it out in due form. The tooth was certainly a retained one, not a supernumerary, which had so embedded itself that the root lay obliquely in the alveolar process. At the same time the body had completely turned itself on its long axis so that the labial surface of the crown was directed towards the mouth, and the palatal to the upper jaw.

No doubt the tooth had not developed first in old age, but at the usual time, and was hidden transversely in the jaw ; the root lay behind the roots of the other teeth towards the mouth. When the absorption of the alveolar process first began, the tooth commenced to press downwards. But the most remarkable point would be the large cavity of decay, with the consecutive periostitis. Baüme says that the continued pressure of a retarded tooth against the roots of its developing neighbours may cause absorption and periostitis of the latter. The reverse condition has occurred here, a case which has not yet been recorded in literature. After resorption of a part of the palatal surface of the tooth a penetration by dangerous agents, acids and fungi by the gum margin, was easily possible. In the course of the year, namely, when the eruption had begun, inflammation of the root membrane appeared. Had one been able to wait one's time, the tooth would have come into sight in the same way as is so often the case with old roots, which by degrees push through and then adhere to the gum surface.

AROMATIC CHLORO-ARISTOL.

For the treatment of dead and infected teeth or roots of teeth, also for alveolar abscesses with or without fistula, the above is the name I have given to the following combination:

Aristol . .	1 drachm.
Chloroform . . .	½ ounce.
Oil of cassia . .	10 minims.

Owing to its gummy nature, it cannot be used with a syringe, but with a smooth broach wrapped with cotton fibres it can be very readily forced through the root-canal after properly enlarging it.

A blind abscess at the apex of a root can thus be successfully treated, even where there is no drainage.—*S. Clippinger.*

British Journal of Dental Science.

LONDON, DECEMBER 1st, 1893.

EDUCATION BY EXPERIENCE.

THE recent prosecution of Indian oculists carries a lesson which possibly might have been still more forcible and useful if the personages proceeded against had been of our own nationality. The influence of a time-honoured mystery which the popular mind attaches to orientalism and a dark skin, may have been a factor in the sequence of events laid before the public. Perhaps even fashion may have had something to do with it. Although there is nothing to show definitely that the "patients" knew anything about Mahatmas, yet it is possible some of them had heard that their betters were still perpetuating the custom of receiving wisdom from the East, in metaphysical matters, and this may have induced the poor people in Wandsworth, and elsewhere, to place reliance upon Indian methods for the more materialistic needs of physical vision. The description ot the operations performed leaves, however, little to joke about, and the best explanation is the simplest. Poor people who had lost their sight had read to them advertisements which asserted that blind persons were "daily receiving sight," and that operations were "beautifully, quickly, and successfully performed." Our readers are probably cognisant of the kind of evidence given in the case by the victims, and it became manifest from the scientific and expert testimony produced that heavy damages for malpraxis might have been successfully sued for in a civil Court. The charge against the "oculists" alleged that they obtained money by false pretence, but as it was not proved to the satisfaction of the jury that the prisoners were themselves aware that the pretences were false, a verdict of "Not guilty" was returned. Here again the nationality of the offenders appears to have stood them in good stead, and it would seem that so long as such practitioners abstain from making themselves acquainted with the existence of certain laws in their adopted country, the necessity for bringing their diagnosis and treatment up to date is a matter of secondary importance. Sometimes, however, the voice of the law speaks in their favour. For instance, a metropolitan magistrate is reported to have told some other members of the same fraternity that they were legally entitled to pursue the calling of oculists; although they must not describe themselves as "doctors," for having done which they were then before him. However hazy their views may now be as to the apparent conflict of legal opinions, they have learned by their most recent experience that their methods of treatment are not those practised by the most skilful of our ophthalmic surgeons. That they will no longer be able to plead ignorance upon this point may be regarded as some slight good resulting from the trial; but will they impart the information to their fellows?

With regard to the poor people who have paid their ill-spared money for these Eastern operations, their experience has been dearly purchased, and in most cases we may imagine that they will not need to avail themselves of it in the future. They can only do good by serving as object-lessons to their friends and neighbours, but it is doubtful whether in the hurry and rush of daily life even the revelations now made will be sufficiently striking. The whole matter turns our attention to the question we have previously noticed. To what extent should the State interfere with the liberty of the subject and protect him against himself? The oft-quoted saying that people wish to be deceived and will be deceived does not, we hope, apply to the majority, and we must surmise that they are merely indifferent upon the subject. The Judge, and the jury, apparently recognised the absurdity of the existing laws, and the rider to the verdict deserves to be repeated. "They deeply regret that there exists at present no criminal law to prevent persons with such gross ignorance as the defendants from practising surgery." We are thus brought face to face with the fact that whilst our laws prevent operations and experiments upon animals by incompetent persons, there is no restriction placed upon those who, for gain, are allowed to mislead, and operate upon, afflicted members of the community.

One almost feels inclined to call upon Societies for the suppression of vivisection and cruelty to animals and children, to turn their attention and a little of their surplus energy into the direction of poor ignorant people who are at the mercy of hosts of charlatans. The Indians will perhaps take their lesson to heart; but the experience of the past makes it seem almost too much to expect that the case-hardened British Public will profit to the same extent. Its education, even by experience, is tedious.

THE LATE DR. THOMAS.—The French dental Journals contain accounts of a visit paid to the tomb of the late Dr. Thomas, by some three hundred persons, in connection with the erection of a monument to the deceased gentleman. Dr. Thomas was a librarian in the Faculty of Medicine, but had always been identified with the best interests of the Dental School of Paris, and in the early part of this year he accompanied M. Touchard to England on an official inspection of our methods of teaching. Dr. Thomas had a singular charm of manner, and his suddenly fatal illness whilst out walking with a friend was a severe blow to his colleagues. A subscription list for a fitting memorial was generously responded to, and on October 22nd, a series of speeches, according to French custom, was made at the grave, all bearing testimony to the excellent attributes of the deceased.

THE INTERNATIONAL MEDICAL CONGRESS.—According to the latest arrangements the Congress will commence on March 29th next year and last for a week. The occurrence of the Easter holidays at this time will doubtless enable some to attend who might otherwise find it inconvenient, but there is a drawback from the fact that Rome at such a time is generally full and the hotel accommodation will necessarily be limited. Indeed, the hotel-keepers asked the organising Committee to postpone the Congress until May. It is expected that the new "Policlinico" buildings will be so far completed as to allow of the opening ceremony, and also to provide room for the nineteen sections.

A SYSTEM OF STATE MEDICINE.—Dr. Alderson has formulated a scheme for providing the people of this country with medical attendance on somewhat similar lines as those upon which free education is arranged. It is suggested that under some such method the existing evils now prevalent in the medical profession would be avoided. Adequate remuneration at the hands of "an enlightened and beneficial Government" would be provided, the whole country being mapped out into districts according to area and population with a fixed number of medical men to each. The *Lancet* thinks it would give a kind of dull security for the means of living to a man, but we would suggest that the dullness would be sometimes enlivened by the exorbitant demands of the State patients, and that a steady flow of hypochondriacal petitions would pour in upon the particular Governmental Department entrusted with the organisation of State medicine. Again, there arises the question suggested to one's mind in reading the Socialistic "Looking Backwards." Would the citizen patient have no option in the choice of his medical attendant? Some one in the "district" would probably be still regarded as the "best doctor" and his lot would not be a happy one unless he carefully cultivated bad habits to secure release.

Electricity for Toothache.—*Die Zahntechnische Reform* quotes a statement in the *Revue Internationale d'Electrotherapie*, according to which Dr. Gatschkowski of Rybinsk (Russia) has applied the electrical current for the alleviation of toothache. This is obtained by holding a point in the direction of the affected tooth whilst the patient sitting on an insulated stool is brought into connection with a continuous current. The claim is made that a continuous current not only relieves nervous toothache, but also, in a remarkable manner, the pain caused by inflammation of the pulp and root. After two or three minutes the pain becomes less, and after five minutes has completely gone. We are told that the pain returns again after a certain time, but weaker; and after some sittings of ten minutes duration, vanishes altogether. This method produces a marked paleness of the gums. In 3 patients out of 76 the operation failed.

Death from Pental.—The *Journal fur Zahnheilkunde* takes from the daily newspapers a report of the following fatal case in the clinic of Prof. Hollaender. On August 29th, the two assistant dentists anæsthetised the daughter of one of the Vienna Operatic Company. The patient was fifteen years of age and wished to undergo a tooth operation. Pental was used, and notwithstanding that all the precautionary measures recommended in the use of this new method were employed, the girl never recovered from the anæsthetic, and all attempts, for some hours, to restore animation were fruitless. A post-mortem examination resulted in an opinion that death was due to the action of pental. We publish elsewhere a report of two other fatal cases during inhalation, and the paper from which the translation is taken expresses the view that the "absolute," as well as the "relative" safety of this new anæsthetic is at an end.

A SUGGESTED NEW DENTAL TITLE.—After the decision in the case brought by the College of Veterinary Surgeons against a "veterinary-chemist," a correspondent wrote to the *Chemist and Druggist* to know if the use of the description "dental-chemist" would be an infringement of the Dentists' Act. The reply, taken as a whole, is so sensible as to warrant repetition. "It is impossible to answer such a question. No one can tell how a Judge might regard such a description. The question for him to consider would be whether the term implied that the person using it was specially qualified to practise dentistry. We do not ourselves consider it does, but a Judge might think differently. The term "veterinary chemist" meets a real want: the term "dental chemist" would be a senseless combination, and could only be adopted for the purpose of leading some people to imagine that it implied some sort of qualification. We should not be inclined to assist in the defence, nor even to sympathise with anyone who might be fined for using it."

NATIONAL DENTAL HOSPITAL.—Old Students who by inadvertence, have not received the usual notice, are reminded that the Annual Dinner takes place in the Venetian Saloon at the Holborn Restaurant, on the 8th instant. The chair will be taken by Prof. Michael Foster, F.R.S. Tickets may be obtained on application to the Secretary.

MANUFACTURE OF COCAINE IN PERU.—The manufacture of cocaine is carried on at Callao by Mr. Bernard Prüss, the leaves used being produced in the province of Huanaco. The quantities exported during the year, 1892, are given as follows: London, 2672 pounds; Hamburg, 932 pounds; and New York, 221 pounds, the total weight of 3825 pounds being valued ai £23,422 10s. (*Consular Report*, 1185, 6).

Abstracts of British & Foreign Journals.

OBTUNDING THE SENSIBILITY OF THE DENTINE.

By Dr. W. C. Davis, Lincoln, Neb.

If we are to eliminate pain from an operation we should first study its cause, and the means by which it is transmitted to the seat of realization. He combats the theory of nerve fibres in the dentine, claiming that the tubuli are filled with protoplasm, which is capable of transmitting the sensation of irritation to the odontoblasts lining the pulp chambers and root canals, each of which is connected with one or more of the terminal fibres of the sensory nerves. Chloride of zinc, or carbolic acid applied to the dentine will coagulate the protoplasm, thus destroying its life and obtunding sensibility, because we have destroyed the medium through which the sensation is transmitted. Coagulation of the protoplasm not being permissible because of jeopardy to the pulp, the alternative remains of removing the protoplasm from the tubuli. This he accomplishes through the application of alcohol vaporized by hot air, leaving the tubuli empty and the sensibility of the dentine obtunded. But as the dentine is hygroscopic—capable again of taking up moisture ; from within by capillary attraction, from without by contact with the atmosphere ; the next step is to fill the tubuli with some other substance. He fills the tubuli with a resinous gum in suspension in a volatile oil. Almost any one of the essential oils will answer the purpose. Upon the application of hot air the oils are easily volatized, and if it has been diluted slightly with alcohol it will readily go into the tubuli as far as they are empty, leaving the gum to fill the space. To this distance you can excavate with impunity ; consequently, the success of the operation will depend upon the thoroughness with which you extract the protoplasm.

There is no method which has partly obtunded the sensibility of dentine, whether freezing, superheating, application of caustics or devitalizing agents, etc., that cannot be explained upon the hypothesis given. This method of obtunding the sensibility of the dentine will come nearer attaining success than any before presented, inasmuch as a foreign substance is inserted in its place after extracting the medium for transmission of pain.

In cases where local means seem to meet with failure a general anæsthetic is resorted to, as follows : Take an ordinary gas apparatus with a Buffalo inhaler. In the inhaler place one drachm each of alcohol and ether, also four or five drops of nitrite of amyl in solution. Administer as in giving nitrous oxide. The first effects noticed are those of the gas. Five or six inhalations of this compound anæsthetic are sufficient to produce anæsthesia. The symptoms are similar to those after the administration of nitrous oxide gas alone, with addition of the flushed face caused by nitrite of amyl. The anæsthesia from the gas and ether soon passes away, leaving the patient semi-conscious, with the power of conversing with the operator and seemingly capable of realizing all that is going on ; but there seems to be a temporary paralysis of the fifth nerve, especially the third division, lasting from ten to fifteen minutes, sometimes twenty. It is a fact well known to the medical profession that a few inhalations of nitrite of amyl will give speedy and temporary relief to neuralgia; also the suffocating sensation incident to an attack of asthma; also that upon its administration there seems to be dilatation of the capillaries in the parts supplied by the fifth nerve, as is evinced by the flushed face ; altogether going to show that this drug seems to have a special action on the fifth nerve. This led to experiment, with the result above stated. These two methods will make the operation of tooth-extraction entirely painless, the result being universal, as far as experiments have gone at present.

For general practice he would not, at present, care to advise the use of any general anæsthetic for an operation upon the teeth. It is certainly attended with some danger. The amount of danger connected with the administration of an anæsthetic as complicated as the one just given he is not now prepared to state. However, he believes it to be comparatively safe as the action of the various ingredients upon the cardiac muscles and regions, as well as upon the respiratory organs, is antagonistic.

The Dental Register.

HASKELL'S METHOD OF MOULDING.

What changes are necessary in the plaster cast for a full upper set?

The palatal bone is the only portion of the upper jaw that never yields to pressure, whereas the alveolus is liable to change, and in a majority of mouths does to a greater or less extent. Unless provision is made to prevent it, the plate will rest on the palate and rock.

With a thin film of wax raise the surface from near the anterior ridge to near the posterior margin of plate.

Are the vacuum cavities, so commonly used, necessary?

If the palate fits so that it comes in close contact with the membrane, there will be all the adhesion that is necessary, whatever the shape of the gums and palate.

How should the model be shaped?

Flaring, so it will drop from the mould, as it will find its way out, and not mar the mould as is liable if lifted.

When are "cores" needed, how made, and how used?

In a very small per cent of cases, the process is so prominent the model will not draw from the mould without removinga portion of the sand. The "core" is made by oiling the surface of the model as far as undercut; place on a slab and apply one-third inch in thickness, equal parts of plaster end asbestos, the latter to prevent the core from shrinking and cracking and breaking in using if more dies are needed; dry thoroughly, and mould with the core in place; as it drops from the mould, replace and cast the die.

In partial lower sets when needed, the core must be made in two sections; the first extending from the posterior corner two-thirds across the model; when hard, jar loose and make the other section from the other corner, to meet the first, and proceed to mould after drying, as in the upper case. The core can be dried rapidly over the gas burner.

How should the moulding sand be prepared?

Mixed with sweet oil to the same consistency as when water is used.

What are the advantages or disadvantages of oiled sand?

It can be used many times without re-oiling; there is no danger of "blow-holes" in the die, as when water is used; can be packed hard, so as to make a better mould. It has no disadvantages.

What are the qualities requisite for dental dies.

Non-shrinkage, hardness, toughness, smoothing and melting at a low temperature.

Why melting at a low temperature?

So that oiled sand can be used. Zinc is poured so hot the oil is burned, and much odour results.

What alloy of metals has these qualities?

Babbitt metal.

Are there different formulas for Babbitt metal, and what one is suitable for dental dies?

There are many formulas, and to cheapen it, lead is substituted for the tin, which ruins it for this purpose. The formula which has stood the test is—copper, 1 part; antimony, 2 parts; tin, 8 parts; melted in the order named.

If it lacks fluidity when melted, or is brittle, what is the remedy?

Add more tin.

What is used for a counter-die for Babbitt metal?

Lead, 5 lbs.; tin, 1 lb.

Why cannot pure lead be used?

It melts at a higher temperature than Babbitt metal and when poured on it, adheres.

What precaution is necessary to further prevent adhesion?

Coat the die with whiting, and stir the lead till it cools somewhat.

Is it necessary to put anything on the model before moulding?

If the sand is freshly oiled, sometimes soapstone is necessary.

What sort of moulding rings are needed?

Made of boiler-iron, 5 inches in diameter; 3 inches high.

How should the mould be made?

Place the model inside the moulding ring; throw in the sand around the sides, placing the fingers on the model to prevent striking it, and pack with a potato-masher, using the handle; keep adding sand; no need of sifting, when packed hard; use the other end of the masher over the top of the model; fill even full.

How should the model be removed from the mould?

Allowed to drop out, and if it holds, jar against the edge of the moulding box.

How should the die be arranged for casting the counter-die?

Sink it into the sand, nearly to the border-line of the plate, and place a small ring, or a Bailey flask, over it.

Is there need for other metals for dies?

None.

How many dies are needed?

In many cases one only, and when the second is required a second counter-die is not necessary.

Ohio Journal.

THE STATUS OF THE DENTAL PRACTITIONER.

There is a science and there is an art of dentistry, and the latter should be the material expression of the former. A science is a system of classified knowledge; an art is, in general, the material expression or utilitarian application of the Science, though an art may have but an empirical basis. Thus, the invention of the Leblanc soda process, which gave to the world cheap glass and cheap soap, was a scientific discovery based upon a knowledge of chemical principles; and yet the art of making soda might be conducted in the most empirical manner by a workman instructed in its details, even though he were devoid of knowledge as to the scientific principles involved. Or it is quite possible for a laboratory workman to solder a gold plate without any scientific knowledge of the constituents and physical properties of the alloys he uses; but in his case so much of dentistry as he has acquired is a mechanic art. He might add indefinitely to the details of his empirical knowledge until he were able to practise within a limited field, but his practice would be that of the mechanic even in his operative procedures, and his treatment and operations be empirical. The science of dentistry is developed by the application of the scientific method in observations upon the cause and effect of phenomena related to the oral cavity and its treatment. It concerns itself with the why of these phenomena, whereas the attitude of the art is related to the question, How are they to be adapted to utilitarian ends? One is the explanation of the cause, the other the means to the end, and these two conditions are interdependent and inseparable. Human experience in other departments of knowledge has shown that the greatest progress has resulted from an understanding and correct application of the principles which are behind phenomena,—*i.e.*, the most rapid development takes place from the scientific standpoint and by the application of the scientific method.

The Dental Cosmos.

THE RELATION OF SYPHILIS TO DENTISTRY.

By Dr. G. Frank Lydston, Chicago.

(1) The specific relation of syphilis to dentistry; (2) The nutritional relation of syphilis to dentistry.

By the term specific is meant the relation of infectious secretion-bearing lesions about the mouth to dentistry. The second class embraces those disturbances of the teeth and jaws which are the result, not of the action of infectious syphilitic processes *in loco*, but of secondary nutritional aberrations incidental to the impression of syphilis directly upon the parts affected, and indirectly upon these parts through the medium of the nerves and vascular supply.

It is by no means infrequent that syphilitic patients will submit themselves to dental manipulations without informing the dentist of their constitutional infection. In such patients, an innocent, so called aphthous ulcer may be a poison-bearing syphilitic lesion. Operators who are brought in contact with the more aristocratic class of patients are rather loath to attribute lesions of the mucous membrane to syphilis, especially when such lesions resemble those innocent aphthous ulcers that frequently result from simple local irritation or from digestive disturbance. It is to be remembered, also, that a small mucous patch, syphilitic erosion or ulceration, or perhaps a small fissure, may exist at the bottom of some fold or reduplication of the mucous membrane and be overlooked, the mouth appearing, on a superficial examination, quite healthy. The poison-bearing lesion may appear and disappear very rapidly, yet the saliva and mucous secretions of the mouth may be none the less contaminated, and remain so for some days after the complete disappearance of the lesion. It is by no means unusual for small syphilitic ulcerations to exist in the irregularities of the tonsils or folds of the fauces. A frequent location is between the pillars of the fauces, where only careful inspection can detect them. A superficial examination of the mouth and throat under such circumstances will disclose an apparently healthy oro-pharyngeal cavity. A small syphilitic ulcer or mucous patch may exist beneath the tongue or on the floor of the mouth where it is concealed from ordinary inspection. Mucous patches far back upon the base of the tongue are frequently overlooked.

From what has been said, it is evident that from the standpoint of the possibility of infection, no mouth should be considered free from suspicion, and only by such suspicion can the dentist protect himself from the danger of infection of innocent patients. Oftentimes the patient himself is unconscious of the existence of syphilis in his system, but this innocence on the part of the patient is no safeguard against the infection of healthy persons. A very frequent lesion seen in the mouths of syphilitic patients is a superficial thickening of the mucous membrane, producing the so-called "milk spots." Here we have a pearly gray infiltration of the mucous membrane with the syphilitic neoplasm, the secretion of which is highly infectious. The secretions of the lesions of the mouth seen in secondary syphilis are the most infectious of all the manifold lesions of this disease, not even excepting a primary chancre. Several cases in which patients presented themselves for diagnosis and treatment of primary syphilitic lesion of the tongue and lip have been, at the time of inspection, under the care of a dentist. The inference as to the danger of infection of healthy patients is at once obvious.

The safeguard of the dentist is (1) to regard all lesions of the mucous membranes of the mouth, tongue, and throat as possible elements of danger of infection, no matter how innocent looking the lesions may be; (2) to remember that the healthiest-appearing mouth may possibly contain in some obscure situation the poison-bearing syphilitic lesion; (3) that the secretions of lesions upon the mucous membrane in this location—certain tertiary lesions possibly excepted—invariably contain the contagium of syphilis in a highly active and virulent form; (4) nothing short of the application of prolonged dry or moist heat, or immersion in pure carbolic acid' can be depended upon to destroy this contagium.

Nutritional changes of the tissues which come within the immediate province of the dentist may be classified as (*a*) those due to hereditary,non-contagious syphilis;(*b*)those due to congenital, active, and contagious syphilis; (*c*) these due to the constitutional influence of acquired active syphilis; (*d*) those due to acquired syphilis that is no longer active,—that is, certain tertiary forms of the disease; (*e*) those due to nutritional disturbances produced by the remedies used for the cure of the disease.

These varieties of nutritional disturbances require some special consideration. It is to be remembered that syphilis in the parent may manifest itself in the child in two ways. (1) In unequivocal syphilis; (2) in the form of what may be termed attenuated syphilis, which, properly speaking, is not syphilis at all, but comprises certain nutritional derangements incidental to a faulty constitution of the child, due to the impression of constitutional syphilis upon one or the other, or both, parents. This has generally been overlooked, inasmuch as the physician is prone to classify such conditions under the more or less indefinite term of struma or rickets.

Parrot was not so far from the mark when he attributed rickets to hereditary syphilis. He, however, was inclined to term rickets hereditary syphilis. As far as the relation of rickets to hereditary syphilis is concerned, it consists merely of malnutrition incidental to a faulty constitution, which constitution is hereditary, and is due to malnutrition of the parents, due to the syphilitic impression. It is not syphilis at all, and is not susceptible to the same treatment as true hereditary or congenital syphilis, but should be treated essentially upon the same therapeutic principles as rickets due to other causes of nutritional abberration. The same influence which syphilis is capable of imparting to the child through heredity may give rise to a faulty conformation of the jaws and a low grade of vitality of the structures of the teeth themselves, as a consequence of which irregularity of development, maxillary deformities, and premature decay may result. There is nothing specific about this relation of syphilis to dental pathology. On the contrary, this relation is a general and nutritional one.

The *rationale* of the causation of these internal disturbances in the child is (1) a tropho-neurotic disturbance in the parents; (2) the transmission of the tropho-neurotic aberration to the child.

a. The relation of tropho-neurotic disturbances to various manifestations of so-called hereditary syphilis are much more important than is generally believed. Many of the late lesions, and possibly some of the earlier ones, of acquired syphilis are due, not to the action of the specific virus *in loco*, but to nutritional perversions of a local character incidental to the impression of the syphilitic poison upon the sympathetic nervous system, the function of which is largely trophic.

b. The lesions due to congenital and active contagious syphilis are in no wise different in their relations in general practice from those of the acquired form of the disease. There is usually a clear history of the presence of the disease in the active form at an early period after birth, or perhaps at birth. Fortunately, by far the majority of cases of congenital syphilis die during the first year, and those who eventually do come under the care of the dentist present lesions due to nutritional abberation rather than specific and active lesions. There are cases reported of hereditary syphilis in which the osseous lesions, particularly about the maxillæ and other bones of the face, have come at a very late period, but there is an element of doubt concerning a certain proportion of these, and in by far the majority of them previous lesions might have been detected had the cases been under careful and continuous observation.

c. Active syphilis in the acquired form may produce a great variety of lesions of the mouth, jaws, and throat; mucous patches, ulcers, fissures, caries, and necrosis being the chief lesions. These are all contagium-bearing, and the dentist cannot be too cautious in handling such patients.

d. Under this head are certain carious and necrotic processes of the jaws and palate incidental to the tropho-neurotic influence of active syphilis. These lesions are generally of a tertiary character,—*i.e.*, they belong, properly speaking, to the period of *sequelæ*. They are not supposed by many to be productive of contagium, although clinically they should always be regarded as possible contagium-bearing, inasmuch as it is impossible to tell positively at what time the active form merges into the period of sequelæ. They are always to be regarded, however, as septic. Necrosis of the palatal processes, nasal bones, and of greater or less areas of the superior and inferior maxillæ proper, are frequent. It is generally supposed that these lesions are due to the pressure of the syphilitic deposit. By some they are attributed to the corrosive or local destructive action of the syphilitic poison. The author regards these views as incorrect. The entire palate may be destroyed without any pre-existing pain, swelling, or any local disturbance which would be consistent with the view of pressure-destruction of the bone. It will be found also that these lesions are limited by certain anatomical areas, supplied by certain nerve-filaments. The bone, under these circumstances, will be dissected out by the disease as cleanly as it could be done by the knife. A sufficient amount of cell-deposit or local inflammatory action, sufficient to produce complete destruction of one or both palatal processes of the superior maxilla, could rationally be expected to be productive of great pain, local swelling, and other manifestations of the local destructive process.

Per contra, very often the patient will present himself with a history of a small ulceration in the hard palate. The introduction of the probe will disclose, much to the patient's surprise, the presence of a sequestrum, involving, perhaps, the entire osseous tissues of the palate on one or both sides. The author cannot explain this peculiar condition upon any other theory than the existence of a tropho-neurotic disturbance, which has so cut off the nutritional activity of the bone that death has resulted.

e. It must be remembered that mercury used in excess, or in special cases of idiosyncrasy, is likely to produce inflammation or ulceration of the mucous membranes, or carious or necrotic osseous processess that are in no wise different, clinically, from those produced by the disease *per se*.

The Dental Cosmos.

NOMENCLATURE.

At the Chicago Congress, in Section VIII.,—Education, Legislation, and Literature, Dr. G. V. Black read the report of the Committee on Nomenclature. The task set the Committee was to present a plan by which a universal system of nomenclature may be adopted by the Congress, that will be acceptable to the profession of the entire world. Within the last two and one-half years, 2,965 persons have contributed articles and books to the literature of dentistry, in the English, French, German and Italian languages. The number of journal articles contributed during that time, exclusive of editorials, is 6,314. To harmonize the views of so many writers is very difficult. The scheme presented involved the following points :

1. The plan to be the same in all languages.
2. Use terms from the Greek and Latin wherever practicable.
3. When impracticable, agree upon a word from some other language.
4. When this is impracticable, use terms from each vernacular.
5. Adopt the general rules followed in other sciences.

The following general rules were recommended :

1. Carious cavities to be designated by the surface involved.
2. When two surfaces are involved, compound the words.
3. The same rule should be followed where there are three surfaces.
4. Cavities in angles to be named after those angles.
5. Mesial and distal surfaces to be denominated proximal.
6. In superficies, qualify with an appropriate adverb.

The report recommended that a commission be formed to follow up and complete the work thus outlined.

The Dental Practitioner.

TEACHING THE PUBLIC.

At a meeting of the Alabama Dental Association under the head of Physiology, the subject of nutrition was discussed at some length.

Dr. C. A. Murill attributes the decay of the teeth of women and children to their large use of starchy foods, as bread and butter, etc. A dentist, to be worthy of the title of doctor, which means *teacher*, should teach his patients about these things, prescribing the proper diet, especially for mothers and children.

Dr. R. R. Freeman, Nashville, Tennessee, spoke at great length on the subject of cleanliness as the great preventive of dental decay. On his bill-heads he inscribes the motto : " Clean teeth don't decay," and if complaint is made of the amount of the bill he refers to the prime cause. He also ascribes much of the trouble with the teeth of young children to modern methods of education. Nature is given no chance—children are forced in the struggle to keep pace with others, to lead a perverted, pathological, existence, their lives overshadowed by the cloud of miscalled *education*. Instead of being "drawn out" they are deprived and crushed by the burden that is laid on them.

ENGRAVING ON GLASS BY ELECTRICITY.

A correspondent of the *Popular Science News* states that a New York doctor has invented a process of engraving by electricity. The essential part of the patent is a brass holder, through which pass two copper wires to a slate pencil at the end, around which is a platinum wire, so that the current passes through one copper wire, around the platinum wire, to the other copper wire, and back to the dynamo. A syphon is introduced through the brass holder, thereby keeping it sufficiently cold to handle. A battery or dynamo may be used to generate the electricity, which must be up to 40 amperes. The current renders the platinum point nearly white with heat, so that it melts the glass under it and cleaves a shaving out of the hardest kind of glass. Some remarkably fine work has been accomplished by means of it, and smoke-quartz, agates, and the like may also be engraved.

AMBLYOPIA DUE TO DENTAL IRRITATION.

By J. W. Park.

The patient complained of headaches, blurred vision, etc. R.E.V.=6—26, L.E.V.=6—6, with correction of ametropia V=6—6 in either eye. However, she returned in a few days reporting rapid failure of vision of right eye; vision was reduced to counting fingers at ten inches. Action of pupil was sluggish; ophthalmoscopic examination revealed nothing to account for the trouble. Diagnosis, however, was made of retro-bulbar optic neuritis, and she was put on potassium iodide treatment. Vision continued to fail. It was suggested by one of the physicians who saw her to examine her teeth, which, being done, it was found that five of her upper teeth on the right side had been filed down level with the gums. and that upon these she was wearing a set of artificial teeth. Four days after the extraction of the stumps of teeth her vision showed an improvement. In less than two months vision was fully restored, and showed no change at a later date.

"This was undoubtedly a case of amblyopia, due to dental irritation of the fifth pair. The pathology of these cases is not definitely known, but is supposed to be due to some vasomotor disturbances of the retina or centres of vision."

Annals of Ophthalmology.

DISINFECTION OF DENTAL INSTRUMENTS.

By Jos. Arkövy, M.D.

The question is to find a method, in the application of which we can fulfil the two conditions of sterilization—the mechonical as well as the chemical—in the one act.

The aim of the experiments was therefore, first, to save the time consumed in a mechanical cleansing; secondly by the application of the strongest agencies possible to shorten their time of application as much as possible. Then if we dispense with a complicated apparatus, etc., we have a method of disinfection capable of practical application. For this purpose I filled a glass vessel (length 16, breadth 10, depth 11 c.m.) with coarse building sand which had been sterilized in a hot-air steriliser for six hours (until it was roasted a deep brown). The disinfecting fluid was then poured upon this sand-bath until it was thoroughly soaked. A sterilized (sublimate) piece of pasteboard or a glass cover rests upon the vessel when not in use. Two centimetres from the top the vessel is left empty. Every instrument, whether a pair of pincers, scissors, scalpel, excavator, mirror, probe, pincettes, or drill, is then pressed into the sand as far as necessary, and passed through it two or three times (sharp instruments, scalpel, etc., with the backs downward). The sand removes mechanically any particles clinging to the instrument. If they have become partly dried, they are dissolved by the dampness of the sand. When specially necessary, the instrument is left standing for some time in the sand. When it is taken out again, it is only necessary to wash off the clinging particles of sand, either in a solution of the same agency or in some other fluid, which can be kept in a preparation glass (with a ground-glass stopper) beside the sand-bath ; or instead of this a coarse flannel cloth can be used, in the fibres of which the sand will remain clinging. Instruments which have joints must be freed from sand by a tooth-brush, if it has not all been washed off.

I have had this method in operation since August 1892, and find it so satisfactory that I have introduced it into the dental clinic of the university, in such a way that every operating chair has a small disinfecting apparatus of this sort. In this connection I may remark that the wash can be used at the same time for the disinfection of the fingers of the operator. I believe this sand-bath can be used as a means of sterilization at least a month without any danger. Even then the sand would excel the hot-air sterilizer. In a private house, where such an apparatus is not at hand, an ordinary dish from the kitchen may be used ; this, together with the sand, roasted over the fire or over a strong flame, will fulfil the purpose. The satisfaction which this method of disinfection has given me has caused me to communicate it to my colleagues in the profession. Perhaps it will meet the wishes of some one.

To the use of the sand-bath as a means of mechanical cleansing was joined a small series of agencies as chemical disinfectants. This formed the substance of a series of investigations in bacteriology which are given as briefly as possible.

First series of experiments.

Agencies :

1. Four per cent. sublimate solution in the sand-bath, with previous washing in chloroform. 2. Four per cent. sublimate solution without chloroform. 3. Concentrated lysol (100 per cent). 4. Fifty per cent. lysol solution. 5. Fifty per cent. phenosalyl solution. 6. Twenty per cent phenosalyl solution. 7. Twenty per cent. boiling soda solution (according to Miller, for the purpose of comparison). 8. Electricity.

The method followed in the experiments was as follows: In every experiment four mouth-mirrors and twenty-four excavators were infected as thoroughly as possible from a number of clinical patients. Strongly carious and gangrenous teeth were used particularly.

The infected instruments were immediately scraped through the sand and then shaken in the wash; then all the instruments were put into sterile, distilled water, the latter for examination. The sand which was infected by the instruments and the fluids were given a thorough examination, everything separately. The sand was, immediately after the process of infection, absolutely sterile (bouillon-culture, gelatin and agar plates); the same was true of the fluids.

After the sand was dry,—the sixth day,—the upper layer of the sand, which had stood under cover, was taken, and the breeding experiments given above were begun with it. It was no longer impossible to discover absolute sterility; on the sand-cultures we found from the fourth to the twenty-second day on every three plates (gelatin) an average of forty colonies. The same was true of the fluids. But all the colonies were shown to be air-bacteria, and were not pathogenic. We are therefore justified in assuming that the sterile sand-bath, even after having partly dried,—which can be prevented by moistening it daily,—can be used for a month or even longer, before it is necessary to resterilize the sand.

Twenty-one experiments were begun in all, of which, however, thirteen were spoiled by small accidents or mistakes, and had to be discontinued. But there remain eight thoroughly tested, faultless experiments. The results are of course based exclusively upon these eight experiments.

Duration of the Operation.—Every instrument was scraped three times through the sand-bath, and afterward, as I stated washed off; this occupied from twenty to thirty seconds.

Résumé.

From the standpoint of practical applicability, the investigations have produced the following results:

1. The sand-bath shows itself to be a rapid method of mechanical cleansing, and replaces the customary brushes and soap.

2. The shortening of the time occupied in disinfecting by the application of concentrations of energies, as directed above, is admissible, since (*a*) sublimate, even in four per

cent. solution, will not injure steel instruments when acting only a short time as directed; (*b*) lysol and phenosalyl not at all.

3. By having fifty per cent. alkali soap as an ingredient, lysol has the useful property of saponifying the fatty part of the infected material in order to allow the other part of it, the cresols, to operate.

4. Chloroform used before the sublimate, in order to hasten and intensify its effect by removing the fat, seems to have no particular effect.

5. Mercuric chloride, when applied in the way directed, with the help of sand-cleansing, is shown to be admissible for disinfecting instruments as well as lysol and phenosalyl; although bacteriological experiments can show no absolute sterility, yet the cultures that sprang up were shown not to be pathogenic.

6. In connection with the boiling soda solution suggested by Miller we can conclude, after having made the two experiments, that it presents a method which will produce absolute sterilization, the plates remaining entirely without growths.

7. The experiments with the strong electric current gave no positive result, and further experiments ought to be made to get more exact results about this question.

8. The second series of experiments produced results agreeing with those of the first series; but the phenosalyl appeared in a less favourable light. Perhaps it was caused by the absence, in this case, of the dilution.

9. It appeared from the third series of experiments that the method of disinfecting instruments for general surgical purposes in an admissible one, and it only remains to prevent as much as possible the gathering of air-bacteria.

Reviewing these results, we have:

I. Absolute sterility is always desirable, and can perhaps be attained by means of apparatus (sterilization) and by boiling soda solution: but

II. Every method of that sort requires much time, a number of alternating instruments, and perhaps a special person as disinfector; and leaving this out of account, we have the annoyance of summer heat and steam in the operating room.

III. Beginning with absolute sterility, we have a series as follows: (1) two per cent. boiling soda solution; (2) four per cent. sublimate solution in sand-bath, with a subsequent washing in chloroform and then in two per cent. sublimate solution; (3) four per cent. sublimate solution without chloroform; (4) concentrated lysol (100 per cent.); (5) fifty per cent. lysol solution; (6) fifty per cent. phenosalyl solution: (7) twenty per cent. phenosalyl solution; (8) electricity.

IV. The method proposed here for the disinfection of dental instruments is nearly equal to the method generally used for surgical instruments, and there is no good ground for depreciating it, since the air-bacteria occur in one case as in the other.

V. None of the methods of disinfecting instruments, previously known fulfil to the same extent all of the four requirements,—viz, absolute sterility, simplicity, no injury to the instruments, and rapidity: and it remains for the future to perfect a method, possibly by means of electricity, that will with one stroke satisfy the wishes of all.

The Dental Cosmos.

PREPARATORY KNOWLEDGE.

By Dr. Jacob L Williams, Boston.

A highly encouraging indication of progress in general professional education, as well as in our special department, is the increasing appreciation of the importance of such preliminary knowledge and training on the part of the student as will enable him to comprehend accurately and readily the instruction given him in his professional pupilage. That this is essential to the best progress in study no one disputes, and requires no argument.

But there is another need which seems too much neglected, or too often only casually implied, in the course of the professional study intended to fit the student to practise. This need is in the matter of direct education in the general principles of medicine and surgery,—that is, in the laws that govern the vital economy in health and disease, the knowledge of which, with the trained ability to apply it, is the only basis of the soundest practice. I say trained ability, for it is not common for the average student to recognize readily the correct relations and applications of those general principles to the cases he may see in practice. It is only the few with special natural intuition that can do so without constant reminding of those relations by their teachers, by which constant training they may in time acquire a habit of such application.

That skill in operation and manipulation is one essential no one questions ; but if that is all to the neglect of knowing how and when to properly apply that skill, the student is only half fitted for practice, and that only by rote, as it were, as his skill is quite liable to be misdirected. And the axiom in engineering holds good here too : "The greater the skill misapplied, the greater the blunder." This ability to discern principles in the application of skill distinguishes the professional practitioner from the simple mechanic, and those possessing it, with an ethical basis of character, may have no doubt that they belong to the great profession of ministers of nature in treating human ills.

In regard to education as preliminary to the study of medicine and surgery, it is generally conceded that the more liberally the student is equipped in all knowledge having any bearing on his proposed professional study, the more satisfactory will be his progress in that study. But with the best preliminary training we often find that the medical pupil needs reminding of the facts and principles the knowledge of which is supposed to be a part of his preliminary acquirements ; so also when he comes to the learning of facts and principals that underlie the laws of health and disease, the average student most especially needs constant training in the relation of those principles to clinical or actual cases.

This is what may be called qualifying education for practice of general or special medicine and surgery. Perhaps this qualifying need is at present most observable in regard to the practice of specialties, of which that of oristry is by no means an exception.

With the ambition, laudable in itself, to excel in manipulative skill, how often do we see the unfortunate results of forgetfulness or ignorance of the principles that should direct or restrain that skill.

To illustrate, it is well known that a heavy blow on the head is apt to produce paralysis of a longer or shorter duration. It is also known—I think first proved by the elder Agassiz—that from continuous lighter blows, the jarring irritation of the peripheral membranes of the brain, a similar result may follow. Ignorant of this fact or principle, a dental operator who prided himself on his skill in building up gold fillings with a heavy mallet, once subjected his patient, a man of fine nervous organization, to sessions of several hours a day for five consecutive days, in building down the six upper front teeth, with the result of paralysis of the patient, from which he only partially recovered, but died in about two years.

Take another actual case. It is well known as a surgical principle that tissues of low organization, like ligaments and cartilage and the gums when wounded, draw more largely in healing on the constitutional vitality of the patient than do the more highly organized tissues of the body. Ignorance of the principle resulted fatally in the case of a lady in a moderate degree of health and strength that required constant care, whose dental attendant extracted sixteen teeth at one sitting. On going home she took to her bed, and died from vital exhaustion in a fortnight. Now, no doubt these operations were skilfully done, but the skill was misapplied, and you know the axiom : " The greater the skill misapplied, the greater the blunder." Many less serious cases might be mentioned.

Now, what I would urge, as from my observation for some years in our own specialty, is the greatest need of more and constant attention, in the schools and with practitioners, to what a zealous doctor, now deceased, used to call "the underlying principles," as the basis of correct practice.

With a knowledge of those principles, and how to apply them, one need have no question in what domain he is properly working.

The Dental Cosmos.

PARTIAL LOWER DENTURES.

By E. L. Townsend.

No form of plate seems to present so many difficulties of construction and use as those intended to supply the missing teeth of the lower jaw. The loss of either the bicuspids or the molars allow the adjoining teeth to lean toward the space, and render the removal of an impression nearly impossible without some damage to it. It is, however, possible to get a good impression of a case by banding the teeth with rings of modelling compound. The impression is taken in plaster with these rings in place. On re[illegible]ster and rings separately, the latter may be replaced in the impression and the cast poured. This ordinarily will give a true model.

If the upper teeth are remaining they sometimes elongate to such an extent as to render an articulation nearly impossible. In such cases the free use of the wheel in grinding the articulating surfaces to an approximation of normal length will be found beneficial, and, as these cases are at the best difficult to wear, all the aid possible should be given the patient, and anything that tends to make the case useful is eminently proper. In articulating the teeth the pressure should be more on the inner than outer cusps, and inclined planes must be avoided. The nearer they approach the condition of a natural set of teeth well abraded, the more comfortable will the appliance be for the patient. Sharp cusps are not, as a rule, useful in artificial teeth.

In many cases it is desirable to reduce the pressure on the gum to a minimum, and when it is possible a crown should be constructed with a shoulder, and cemented on the tooth. A band of clasp metal should be formed to fit the crown and rest on the shoulder, the band being made a part of the plate. This form of plate is open to some objections, but on the whole makes a fairly good denture.

In cases where all the molars are missing, and roots of either the bicuspids or cuspids remain, a combination of crown and plate can be used to great advantage. If there are no roots that can be used, a tooth can be ground down and a gold cap cemented to it and a gold crown made to telescope it; the crown becoming a part of the plate. This combination of crown and plate will be found very satisfactory in many cases, and will in every way compare favourably with bridge-work as to utility, and be immeasurably superior in point of cleanliness.

Pacific Coast Dentist.

If steel is frequently heated it loses part of its carbon and becomes practically wrought iron. To regenerate or rather recarbonize it, the following method is given in *Invention*: Add to three parts, by weight, of pure resin, melted in a crucible and slowly but continuously agitated, two parts of boiled linseed oil, care being taken that the mixture shall not burn. This forms a brown but viscuous mass, and into this the metal must be plunged at red heat.

Reports of Societies.

MANCHESTER ODONTOLOGICAL SOCIETY.

The usual monthly meeting of the Society was held at the Victoria Dental Hospital, Devonshire Street, on Tuesday evening, the 7th of November.

Mr. Murphy, the President, was in the chair. There was a large attendance of members.

ELECTION OF NEW MEMBERS.

The following gentlemen were duly elected members of the Society :—

Mr. Henry T. Dreschfeld, L.D.S., Edin., Burlington House, Oxford Road, Manchester.

Mr. George Kershaw, L.D.S. Eng., Heywood.

Mr. Arthur S. Pearse, L.D.S. Eng., 19, St. John Street, Manchester.

NOMINATION OF MEMBERS.

The following gentlemen were recommended for election by the Council :—

Mr. Charles Howard Carrington, L.D.S. Glas., 21, Greek Street, Stockport.

Mr. William Fisher, L.D.S. Eng., 9, Lowther Street, Kendal.

POSTPONED DISCUSSION.

The discussion on Mr. David Headridge's paper was with his consent postponed.

DEMONSTRATIONS.

Dr. Prince Stallard gave a Demonstration on "The Administration of Pental."

Several patients were in attendance, who were anæsthetised in turn, the teeth being extracted by several of the members present. The drug used was obtained from C. A. F. Kahlbaum, of Berlin, and was put up in bottles containing six drachms of the fluid. The period of inhalation ranged from forty to sixty-five seconds ; the patients remaining in a state of unconsciousness from sixty to ninety-five seconds. In some of those who were operated on, severe tonic spasm of the muscles elevating the lower jaw was noticed, so that the teeth were firmly clenched; this necessitated the insertion of a wooden wedge between the teeth for the purpose of unlocking the jaws.

The drug was administered by using an ordinary Clover's Ether Inhaler.

The inhalation of Pental affords to the operator a somewhat longer interval between the removal of the face-piece and consciousness reappearing, than is usually found to be the case during the exhibition of nitrous oxide gas. The signs of commencing narcosis are not nearly so well marked as those seen during the inhalation of N_2O; there is no lividity of the features and stertorous breathing is absent. The pulse is at first quickened, and if the drug is pushed, it becomes thready. Breathing is at first quickened or natural, and if the drug is pushed, it becomes slow, shallow, or sighing. Laryngeal breathing is apt to occur if a prop be inserted in the mouth previous to the inhalation. In all cases a distinct flushing of the face is noticed, and this may be taken as the one cardinal sign of the commencement of the narcosis. This dilatation of the capillaries is exactly similar to that seen after the inhalation of nitrite of amyl. Eye and lid reflexes are seldom absent. In some cases, marked rigidity of the muscles of the neck, arms, legs, or trunk is noticeable.

Pental is to be recommended in those cases where two or three teeth require to be extracted, but it should not be given to very anæmic females, as in these subjects it is apt to cause a stoppage of the respiration. This accident has been noticed in two cases, in both of which artificial respiration was resorted to with success. The after effects of Pental are very trifling; as a rule the patients feel quite well immediately after regaining consciousness, but in some cases slight headache, which soon passes off, is experienced, and sickness is very rarely complained of.

As regards the cost of the drug, Pental compares favourably with Nitrous Oxide in hospital practice, but as it evaporates very quickly, in private practice where a longer interval elapses between each patient, the waste would be much greater.

Filling of Upper Incisor Erosion Cavity with Gold. By Mr. Newton Petit, L.D.S. Eng.

Mr. Newton Petit gave a very interesting demonstration on filling an erosion cavity with gold. After partially preparing the cavity, the rubber-dam was applied to the one tooth under operation, and a long length of waxed silk being taken, and passed round the tooth was tied with a double knot *before* any attempt was made to draw the rubber-dam under the free edges of the gum. A suitable excavator being now taken, the ligature was forcibly and comfortably pressed over the erosion cavity, carrying with it the rubber-dam beyond the gingival margin of the cavity wall. The two long free ends of the ligature being now tied together, the operator wrapped the double strand round one finger of the left hand, and by this means the erosion cavity was kept fully exposed, while with the right hand the operation of filling was satisfactorily completed.

The Filling of Pulpless Teeth with Plastic Fillings. By Mr. J. Mansell, L.D.S. Edin.

Mr. Mansell's demonstration was intended to show an easy method of filling nerve canals in devitalized teeth. The canals being freed from nerve tissue are dried with fine shreds of bibulous paper rolled between the finger and thumb, suitable lengths being carried up the canals with old Donaldson bristles. When the canals are quite dry, a small quantity of a paste composed of iodoform and oil of cinnamon is carried to the apices by means of a similar "Donaldson." The other portions of the canals are then to be filled with twisted threads of bibulous paper, similar to those used in drying the canals. No attempt is ever made to drill out the canals or to fill with gutta-percha or oxychloride.

Mr. Mansell successfully filled a first upper bicuspid, in accordance with the foregoing description of his method.

To **Stain Beeswax** a bright transparent colour, melt the wax and add either annatto or turmeric. The addition of hard paraffin or spermaceti will harden it.

STUDENTS' SOCIETY, LIVERPOOL DENTAL HOSPITAL.

The second meeting of the current session was held on Friday, Nov. 16, E. J. Phillips, Esq. in the chair.

The SECRETARY read the minutes of the previous meeting, which having been sanctioned, the President invited Casual Communications to be brought forward.

Mr. SNAPE showed a model of fused incisor teeth.

Mr. ROSE showed a case of gemination of two right upper molars, their crowns being so exactly similar in size and shape as to give no clue to their history. They both sprang from the same roots, i.e., there were three roots to the two crowns; but the peculiar part of the matter is that two of the roots were growing outwards on to the centre of the masticating surface and were worn and polished by trituration. The third root, by which the specimen was attached, though growing on the buccal aspect, was quite as large as an ordinary well developed palatine fang. In its direction it stood with its broad aspect to the teeth. The patient, a young lady aged 24 years, said the tooth erupted, as well as she remembered at the age of 17 or 18. There was no space where a tooth might have been extracted and she declared none had been removed. Mr. Rose's theory was that the crowns represent the 2nd molar and wisdom tooth, which, having developed in the same crypt, have not had space to develop more than three roots, and two of these, while in a plastic condition, have been distorted into the position in which we see them.

The Chairman then called on Mr. Kaiser for his paper on "The Exclusion of Saliva," which we publish on page 1057.

DISCUSSION.

The discussion was opened by Mr. PHILLIPS who said that, while quite agreeing with Mr. Kaiser as to the advisability of frequently using the dam, it was his experience, as of others, that it was often impractible in practice. He advised the use of blotting-paper to check the flow of parotid saliva, but objected to saliva ejectors on the ground of their liability to septicity and difficulty of cleansing.

Mr. **Woods** advocated the use of smaller napkins than Mr. Kaiser and suggested that no starch should be used in them. He considers it important to tuck up the rubber under the edge of the gum before applying clamp or ligature. He said that for ligatures he found surgeons' twist silk more useful than floss silk; for conical teeth he used a wire ligature. With a view to the common objection of patients to the rubber dam, he suggested the use of the serviette in small gold fillings, etc. He also said he found the use of a continuous ligature advantageous.

Mr. **Snape** thought that with care the saliva ejector might be kept aseptic and the fear of contagion reduced to a minimum; that a fruitful source of leakage was the dam not conforming to the shape of concave rooted teeth as bicuspids.

Mr. **Byrne** strongly advocated the use of the rubber-dam where possible. He considered that where several teeth were included in the dam that it was not usually necessary to ligature them at all, and thought cocaine very inefficacious to obtund pain from ligaturing; he also commented on the use of certain drugs and foods for regulating flow of saliva.

Mr. **Roberts** considered the fear of contagion from the saliva ejector exaggerated, and questioned whether the mucous membrane of the mouth absorbed septic matter.

Mr. **Coysh** disagreed with Mr. Roberts as to the absorbability of mucous membrane, which, in his opinion, was quite sufficient to receive contagious diseases from the ejector, but he thought it quite possible to keep the ejector aseptic. He recommended the Delos Palmer clamps as being light and well fitting, but did not consider cervix clamps as of any great utility. He said he had found Rutherford's speculum useful in children, and made a practice of keeping different thicknesses of ligatures and rubber to suit varying cases; also of washing rubber to remove the nauseous odour complained of by many patients.

The paper was also discussed by Messrs. Parsons, Schofield, and Shields.

The **President** then called upon Mr. Kaiser to respond, which he did briefly.

A vote of thanks was then passed to Mr. Kaiser, and the meeting adjourned.

Dental News.

PRESENTATION.

Mr. Arnold Prager L.D.S. Eng., late House Surgeon to the National Dental Hospital, was presented with a testimonial by the students of that Institution, as a token of their regard. The presentation took the form of a handsomely engraved silver cigarette case.

THE EDINBURGH DENTAL STUDENTS' SOCIETY.

The first ordinary general meeting of the present Session was held on Monday, November 6th, the President, Mr. F. J. Turnbull, L.D.S., occupying the chair.

The paper of the evening was by Mr. J. Graham Munro, L.D.S., and was entitled, "Gold Crowns, with and without Porcelain Faces," illustrated by many enlarged models of cases in course of construction. The demonstration was much appreciated by a large attendance of members.

On the following Friday, a Smoking Concert was held in the saloon of the Windsor Hotel, Princes Street. The Dean, Mr. W. Bowman Macleod, presided, over one hundred and fifty gentlemen being present. Of the students contributing to the evening's enjoyment, Mr. Logan deserves praise as an excellent accompanist.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.

The monthly meeting of the Executive Committee of this Society was held on November 9th, at 429, Strand. The chair was taken by Mr. Ernest Hart, the chairman of the Society, and there were also present the deputy chairman, Dr. de Havilland Hall, Dr. G. E. Herman, Dr. A. S. Gubb, Mr. E. Bartlett, Mr. F. Wallace. Dr. M. Greenwood, Mr. F. S. Edwards, and Dr. W. Knowsley Sibley.

The statement presented by the Secretary showed that the Society's business was increasing in every branch. Twenty-one proposals were received during the month of October, of which fourteen were from new entrants, and seven from existing members desirous of availing themselves of the facilities for obtaining increased benefits which the recent alterations in the rules afford them.

It was arranged that a circular describing these facilities shall be sent to all members of the Society, along with the renewal premium notices for this month, and it is anticipated that a considerable number will take the opportunity of increasing their sick benefit assurance to £6 6s. per week, and also of adding to their annuities and life assurances.

The question of the valuation of the business of the Society, which takes place at the end of this year, was fully discussed. It was determined that the valuation should be made by the Secretary, Mr. F. Addiscott, who is a certificated actuary, and that the calculations and results should be certified by an independent actuary of rank. Arrangements to this effect have accordingly been made with Mr. George S. Crisford, the actuary of the Rock Life Assurance Company, who is a certificated Fellow of the Institute of Actuaries, and one of the public valuers appointed by the Government under the Friendly Societies Act. The large experience of Mr. Crisford as a friendly society valuer, and his high rank as an actuary, make this arrangement very satisfactory to the Executive of this Society, and they feel sure that it will be appreciated by the members.

Every month produces evidence of the value of the benefits conferred by membership of the Society, and October was no exception to the rule. In one case brought before the Committee the member had been suddenly stricken senseless, and for over nineteen weeks had been unable to continue his professional work. So swift was the attack that no time had been given him even to advise the Society of his condition, but the Committee considered that in such a case a strict adherence to the letter of the rules would not be in accordance with the spirit in which they were drawn and intended to be applied, and they accordingly met the claim liberally.

Prospectuses and all other information may be obtained on application to the Secretary, at the offices of the Society, 33, Chancery Lane, London, W.C.

British Medical Journal.

Dental Hospital Reports.

WORK DONE at the Victoria Dental Hospital of Manchester during the month of October, 1893.

Number of Patients attended .	1048
Number of Extractions . .	695
Number of Extractions under Anæsthetics .	140
Gold Stoppings . . .	84
Other Stoppings . . .	208
Miscellaneous {advice, temporary fillings, scalings, dressings, &c. . .	304
Crowns	11
Inlays . , . .	4
Total . . .	2494

HENRY T. DRESCHFELD, *House Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. No notice taken of Anonymous Communications: name and address must always be given, although not necessarily for publication.
3. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
4. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
5. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
6. The Journal will be supplied direct from the office on PREPAYMENT of subscription as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 622. LONDON, DEC. 15, 1893. Vol. XXXVI.

SOME OBSERVATIONS ON THE CELLULAR ELEMENTS OF THE DENTAL PULP.*

By A. Hopewell Smith, L.R.C.P. Lond., M.R.C.S. Eng., L.D.S. Eng.

Mr. President and Gentlemen,—It is my desire to-night to bring before your notice the result of several years' work in investigating and studying the morphology and physiological properties of the cellular elements of the dental pulp.

This is done with no great wish to principally inculcate my own opinions, but to provoke a good discussion, to open up new sideways of thought and conjecture for the purposes of research, and to arrive at some satisfactory and trustworthy idea of these all-attractive yet somewhat abstruse questions. My statements, I trust, will be more argumentative than dictatorial, more suggestive than dogmatic ; for histology is an exact science, and it is needful for many observations to be made and recorded by many original workers who are able to adduce corroborative testimony, ere a hypothetical suggestion finds a solid basis in actual fact, or a doubt be resolved into an accepted truth. It is extremely easy to advance a new theory, but it is often difficult to prove it. An attempt, however, will now be made by means of logical reasoning and theoretical inference, to clear up some debatable points, and elucidate some still obscure matters in connection with the histology and physiology of the cells of the dental pulp. And the production of this paper is due to the earnest belief in the reasonableness and accuracy of the views contained therein. Necessarily much that is already well known on the subject must be mentioned, but there are various new points which can lay claim to a considerable amount of originality.

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* Read before the Odontological Society of Great Britain.

Of all the structures which are noticed on the microscopic examination of a tooth, the dental pulp is the one around which the greatest interest is centred. For not only is it of vital importance to the surrounding tissues during the developmental and completed periods of growth, as well as under certain senile and pathological conditions, but it contains elements which differ markedly from any other in dentine, enamel, cementum, or periosteum. While it thus occupies first place with regard to interest, it is curious to note that so little new has, of late years, been added to its recorded histology and patho-histology ; and that our knowledge, after all, is so very limited. One has but to look back and recall the names of Foubard, Hoffmann, Boll, Waldeyer, Goodsir, Schwann. Kölliker, and later of Tomes, Mummery, Underwood, and Weil, to find that the subject has commanded almost universal attention. Still, who can say what are the exact terminations of the nerves? or who shall speak definitely as to the precise nature and functions of the cells of the pulp? But each mite of fresh information contributed by each individual observer, goes to make up a larger knowledge, and pave the way to a completer science, when it has passed through the stern fires of criticism.

The cells of the dental pulp fall naturally into two classes: of these, the first is the more important during the life of a tooth, the second during its formation. A cursory examination shows that two kinds of cells stand out clearly distinct from each other—the peripheral prominent layer of cells, the so-called odontoblasts, and the central smaller, less defined pulp cells.

In order systematically to discuss these points, the paper will be divided into the consideration of

- (A) Cells of the Membrana Eboris
  - (i.) Their histology.
  - (ii.) Their physiology.
    - (a) Negative evidences
    - (b) Positive evidences.
- (B) Cells of the Pulp Proper
  - (i.) Their morphology.
  - (ii.) Their physiology.

A.—The Cells of the Membrana Eboris.

(1) *Their Histology.*

All along the periphery of a section of the pulp, arranged like a palisade, in a single row, is a layer of large, columnar epitheloid cells. This layer is most marked at the coronal portion of the pulp, and becomes appreciably less distinct at the cervical portion; while in the region of the root it is practically invisible. These facts are clearly seen in the developing teeth or kittens and other embryos, as well as in complete central longitudinal sections of adult human pulps, although in the latter, their columnar character has disappeared. In transverse sections, too, it is not difficult to say with accuracy from which portion of the pulp the particular section has been taken, if this layer is visible. A closer inspection reveals the fact that the membrana eboris is composed of cells—the so-called odontoblasts, a term suggested by Waldeyer in 1870, and generally adopted since that time. In young pulps, it consists of a single row of cells; in adult specimens, several rows. These cells are of the utmost interest and importance. They will be described with regard to shape, size, relationships, structure, processes and analogies.

(1) An odontoblast, generally speaking, is a large multi-

polar, nucleated, epitheloid cell, more or less columnar in *shape*. This varies considerably in the same specimen, and ranges from that of a mere thin cord with bulbar terminations, to that of a pear or banana, as Mr. Underwood* has recently likened it. Many cells are carrot shaped, many caudate. Some are short and thick, some long and thin; some have, as is well known, square dentinal ends, others rounded extremities. But it would appear that those found in fully grown pulps are more or less pyriform in shape, while those in older specimens are reduced often to a thin fibrous bundle. A point worthy of notice is the fact that cells in the same plane—the same section—differ much in conformation Where the pulp is constricted or flattened laterally, there the odontoblasts are thick and short; in the place where the pulp is broadest, however, they are long and thin. Moreover, in the latter situation, in adult pulps, they have enlarged extremities, that near the dentine sometimes presenting a stellate appearance, with the processes leaving the cell from the point of the star. Often this dentinal extremity is triangular, often rounded. The central portion or body of the cell is very considerably thinned and cordlike. In teeth having cylindrical pulp cavities, this diversity in the shape of these cells is scarcely appreciable, and probably does not exist.

It may be said that the same remarks apply also to fully-formed temporary teeth.

Pathological conditions, such as inflammation of the pulp, abscess and calcareous degenerations do not seem to affect the shape of the odontoblasts at first; this rule obtains in all normal and abnormal examples.

(2) With regard to *size*, odontoblasts vary very considerably, the coronal cells being larger and more marked than the radical cells of the pulp. This change in size corresponds to the length and width of the tubules, with which they are

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* "Aids to Dental Histology," 1892, page 15.

closely associated. The largest cells in an embryonic tooth-germ viz., those under that part of the dentine which is covered with enamel, and called for the sake of brevity the coronal part of the pulp, have a diameter of 10 to 15 μ, and if they be compared to adult cells in the same situation, the latter will be found to vary from 25 to 30 μ in length with a breadth of about 5μ. Waldeyer* gives the size of adult odontoblasts, but does not compare them with developing cells —a point of importance which seems to have been overlooked.

(3) *Relationships to Surrounding Structures.*—I† have in a paper written in 1889—to which I may perhaps be allowed again to refer—already shown that these cells are not packed closely together, but are separated by wide visible spaces, which are in certain cases filled with a "homogeneous substance, and small, round, and angular cells." I will only add that this is the case in developmental pulps, there being an absence of intercellular tissue in most adult specimens; and I will further remark that there are visible also in many instances, fine delicate fibrils stretching into the dentine between the odontoblasts, in addition to the already mentioned structures. As far as my research goes, these fibres are not nerves, but form what may be termed the "supporting fibres" of the pulp. Reference to this point will again be made later on.

The long axes of the odontoblasts are approximately in the same direction as that of the tubules—a fact well brought out in transverse sections of pulp cut *in situ*, and best observed in its narrowest part.

(4) In *structure* the odontoblasts possess a fine degree of granularity, which does not disappear on the addition of a weak acid, and is apparently unaffected by glycerine, and certain other chemical re-agents. Their nuclei are large and

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* Stricker's "Histology," 1870, vol. i., p. 476.

† Dental Record, vol. ix., No. 8.

prominent, and situated at their basal extremities. It is said that they have no limiting membrane.

(5) The *Processes* —These cells are remarkable for their polar offshoots which may be classified as (α) central or basal ; (β)peripheral or dentinal, and (γ) median or inter-cellular.

Of these, the first named are most easily observed in sections prepared by Weil's or Decalcifying processes, when ordinary stains are used, but the latter cannot be so clearly demonstrated unless, as Mr. Mummery has suggested, a special method of staining with iron and tannic acid is adopted. Rubin and a few other aniline dyes show them also.

The peripheral poles of the odontoblasts, then, stretch into and enter the tubules of the dentine, and are here called dentinal fibrils. In some cases they are bifurcated, several fibrils emanate from one cell, and nothing else can be seen entering the tubule.

The median or inter-cellular poles are short and extremely thin, and are situated near the dentinal extremity of the odontoblast. They probably serve merely to support and bind together the component parts of the membrana eboris.

It is no easy task to demonstrate the basal offshoots of the odontoblasts. They are very thin and long, and inter-communicate with each other and those of neighbouring cells in such a manner as to form a delicate reticulum. They present no varicosities of surface, are not swollen or twisted, and take the stain less deeply than other portions of the pulp tissue. They are invisible in young developmental cells.

Weil,* in his monograph on the Dental Pulp, has pointed out that this layer of processes is like a basement membrane. He writes : " The layer contains no cellular elements or nuclei, it appears rather as a web of extremely fine fibrils, which do not run perpendicularly through the layer, but running obliquely towards the deeper layers, interlace with one another in a crosswise direction. It may be said with perfect security that they arise from the projecting basal ends of the odontoblasts. It is, however, surprising that these offshoots do not follow the axial directions of the odontoblasts, but turn sideways to one direction or another, and thus form the crossings."

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* " Zur Histologie der Zahnpulpa," Leipzig, 1887, p. 55.

There remains the significant fact that this basal layer of Weil's, composed, as we have seen, for the most part, of the central processes of these cells, measures at the coronal portion of the pulp 1-40 mm. in diameter, gradually thins away and becomes diminished in size, until it no longer exists in the radical part of the pulp. This statement, corroborated by Partsch,* of Breslau, deserves great attention, as will be presently shown.

Further, Mr. Mummery† refers largely to this in a recent paper where he says: "According to my experience the layer is not visible in young teeth in the situation of the rapidly depositing dentine at the open, uncompleted end of the root."

This is what one expects to find if Weil's statement is correct. I may say here, that my own slides bear out Mr. Mummery's remarks; for not only is Weil's layer visible in adult, and in temporary pulps, but I have met with it in certain pathological conditions, although I have never seen it in young growing teeth.

Special stainings, such as Weigert's, Golgi's or Strœbe's have failed, however, up to the present to trace back these central poles to the terminations of the nerves of the pulp; but there can be little doubt that they are continuous.

(6) Lastly, there is a marked *analogy* existing between

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* "Deutche Monatsschrift fur Zahnheilkunde" Aug., 1892, p. 322.

† "Journal of British Dental Association," 1892, p, 779.

the odontoblasts and certain epitheloid cells found in the olfactory region of man and animals, in the ganglionic layer of the retina, and the auditory cells of the macula lutea of the membranous labyrinth. Their processes are similar, their structure identical, their shape only modified by the mutual apposition of neighbouring cells.

(2) *Their Physiology.*

The questions relative to the functions and uses of the odontoblasts are deep and intricate, and for years have been the subject of earnest enquiry. Their small size, delicate nature, and inaccessibility have rendered microscopic investigations difficult, and many theories as to their properties have been brought forward.

It will be helpful, for a clear comprehension of what is to follow, to briefly enumerate these various opinions. Mr. Tomes,* and with him the majority of English observers, believed in the conversion theory of the formation of dentine. The cells undergo changes and become converted into matrix, sheath and fibril. Quite lately, however, Mr. Tomes has spoken on this point with a large amount of uncertainty. At Birmingham in 1893, he remarked,† "We have always been accustomed to say that they (the odontoblasts) formed the whole of the dentine; now we know that they do not."

Again, many histologists, including Magitot, Kölliker, &c., hold to the secretion theory, maintaining that matrix is secreted from these cells.

Klein‡ leans to the belief that the odontoblasts form matrix only, while the fibrils are not their processes, but stretch out from a deeper layer of cells. A section of pulp cut *in situ* shows clearly their processes extending into the tubules.

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* "Dental Anatomy," 1889, page 170.

† Journal of British Dental Association, vol. xiv., page 474.

‡ "Atlas of Histology," 1880, page 185.

In addition, there is the theory of Heitzmann and Bodecker, lately apparently corroborated by Abbot of New York.* Here the odontoblasts are said to be first broken up into "medullary corpuscles" at their distal ends, which become infiltrated first with a glue-yielding basis substance, and afterwards with lime-salts. Thus many conflicting views exist.

The axiom that dentinal fibrils are considered to be sensation conductors is well known to all. Inasmuch, then, as they are regarded functionally in the light of nerves, and as they represent the peripheral poles of the odontoblasts, and are, in fact, part and parcel of those cells, it follows that the latter must be concerned in the act of conveying extrinsic stimuli to the nerves of the pulp. An odontoblast is more of a sensation transmitter than a sensation generator. In other words it is believed to be a means of communication between fibril and nerve ending—not originating, but passing on sensory impulses from without in, and warning the pulp, so to speak, of incoming dangers. This seems to me a sensible argument, and this is my theory.

In order to prove this, it is necessary to show (1) that odontoblasts do not form dentine, as is generally understood ; (2) to prove that they are the end organs of the nerve filaments of the pulp.

Negative Evidences.

The arguments to disprove the dentine-forming theory are many and powerful. They are as follow :—

(1) No observer has ever seen a semi-calcified odontoblast, or recorded the observation of one secreting a calcareous material, although this has been done over and over again with regard to the ameloblasts of the enamel organ, as Mr. Tomes† has demonstrated.

(2) The same cell cannot take on two totally different

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* Dental Cosmos, Sept., 1893, page 821.

† " Op. cit., pages 162-3.

functions simultaneously. In general histology it is found that complex, branched, ganglionic corpuscles exist in the nervous system, while very simple cells—osteoblasts—produce the matrix of bone. There must be a separate cell for the formation of fibril and matrix.

(3) The presence of spaces between odontoblasts would lead one to expect to find like spaces in dentine, but this is not so. *Per contra*, active osteoblasts are closely packed together.

(4) As fibrils and their sheaths are known to cross interglobular spaces, and as the latter are considered to be an arrest of dentinal development, one would expect that if the fibrils were formed by the same agents as those which produced matrix, they themselves (fibrils) would be absent, but this is not so.

(5) Again, in the semi-calcified matrix observed in developmental pulps, fibrils are seen most clearly to stretch across the intervening zone, and there is a distinct mark of demarcation between them and the homogeneous substance through which they extend.

(6) The granularity of the cells, as has been already stated, is visibly unaffected by dilute acids or chemical reagents: thus it would seem that calcium salts enter but little into their composition.

(7) After decalcification in formic acid, the matrix may be torn into laminæ, which run parellel to the surface of the pulp cavity, whereas they would run at right angles to that surface if odontoblasts formed matrix. (See Mr. Mummery's remarks on this matter in *Transactions the Odontological Society for* February, 1892, and also Mr. F. J. Bennett's notes in same *Transactions* for November, 1888.)

(8) The dissimilarity in the shapes and sizes of the cells is against the acceptance of this view; this dissimilarity would be inexplicible if they formed dentine. Osteoblasts do not differ thus.

(9) The fact that secondary dentine nodules in the pulp are formed by small round cells, and that odontoblasts take no part in this work, is clearly seen when sections of pulps containing calcareous degenerations are cut *in situ.*

(10) It is a law that after a cell has ceased its functions, it atrophies and disappears. Here, however, odontoblasts persist long after all dentine matrix has been completed.

(11) In some sections of the root, with pulp *in situ*, here and there odontoblasts are absent. It is remarkable that in these situations their corresponding tubules are wanting.

(12) And finally there must be added Mr. Underwood's* statements—"that the distinction between fibril and matrix is not merely one of degree of calcification," for which are given three proofs ; "that all traces of the boundaries of the cells are absolutely obliterated even in imperfectly developed tissue," and "that the cells and their processes are sharply marked off from the surrounding tissues during all the stages of development."

Positive Evidences.

In order to deal scientifically with the evidences which are at hand, to show what are the functions of the odontoblasts, it is important to take three things into consideration, viz., the development of these cells, their relation to the nutrition of dentine, and the question whether or not the ultimate ramifications of the nerves do enter the odontoblasts.

And here arise the most serious difficulties in connection with the subject. The odontoblasts, as far as is known, are derived from the stomodœal mesoblast, *i.e.*, they are formed on the edge of the up-growing papilla of the dentine organ. If it could be proved that they arise from epiblast, one great difficulty would be removed, for it would be then quite easy to affirm that they are nerve endings or end bulbs, and their analogy to the cells at the terminations of the optic and auditory nerves would be more striking, not only with regard to their morphology, but also their physiology. Most authorities agree that the nervous system is produced primarily by the epiblastic layer of the blastoderm. Schäfer remarks in the last edition of Quain (vol i, part ii., page 352), "All nerve-fibres and nerve-cells . . . are originally derived from the neural or neuro-sensory epiblast." Accepting these statements, one is led to the conclusion that odontoblasts cannot possibly be, from a developmental point of view, ganglion cells in which sensory or tactile or trophic impulses arise *de novo.* But it is no argument against the idea that they serve as sensation transmitters.

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* "Op. cit. pp. 27, 28.

Again, it is difficult to believe that odontoblasts serve merely as factors in the production of and keeping up the nutrition and vitality of dentine, for, as has been pointed out, they are practically absent from the radical part of the pulp. If this were their office, there would be no diversity of shape or size. Dentine is vitalised, in my opinion, by a protoplasmic exudation which emanates from the pulp, and fills the tubules by surrounding and protecting and nourishing the fibrils. The pulp capillaries end near the odontoblasts, but do not enter the tubules.

It is an exceedingly difficult matter to have optical proof that the terminations of the nerves enter the basal extremities of the odontoblasts. It would be different if the nerves did not lose their medullated sheaths. The staining and demonstrating of these delicate threads would then be quite easy. But we have the presence of the basal layer of Weil, which exists in that part of the pulp which is most sentient. Pain from irritation and destruction of the fibrils begins in the crown and neck of a tooth, and not under cementum; and Weil's layer consists of fine fibres which extend deeply into the pulp on the one hand, and into the basal ends of the he odontoblasts on the other. The inference, therefore, theoretically and logically speaking, is that the fibres in Weil's layer are non-medullated nerve fibres. This can only be disproved by the experiment of severing the main trunk of the nerve, and cutting off communication with its centre, and examining the pulp for any degenerative changes that might occur. Gowers* writes, "If a fibre is cut off from its parent cell it degenerates; the part still in connection with the cell does not degenerate." The actual performance of this experiment is impracticable at present for me unfortunately. If it could be done, it would, I think, settle this intricate question.

As odontoblasts are largest and most important in the corono-cervical portion of the pulp, as their functions must be closely associated chiefly with this part—in consequence of their large size and importance, and as this part is that only through which nerve sensations can reach the pulp *via* the tubules, therefore it would seem that the odontoblasts must be more intimately connected with the nervous system than has hitherto been supposed, and they must be the actual end organs or dental ganglia of the nerves of the pulp. And the carollary is that the term odontoblast is a misnomer.

B.—The Cells of the Pulp Proper.

Their Morphology and Physiology.

Little remains to be said about the central cells of the pulp. They vary in size and shape during the various stages of the growth of the pulp. In developing teeth they are large, and have rounded, angular or spindle-shaped outlines. In short, they partake of the nature of embryonic cells generally. Their nuclei are large, prominent and granular, and contain no nucleoli. Near the superficial portion of the tooth they are very loosely held in the meshes of the fine connective tissue stroma; and here more spindle cells are seen.

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* "Diagnosis of Disease of Brain," 1885, p. 4.

In adult teeth the pulp cells are chiefly stellate or angular in shape. Their number is greater, as a rule, than the ordinary round cells; but cells of any description are comparatively few. Connective tissues and nerve filaments are marked. The branches of these cells are long and numerous, and interlace with one another, giving the pulp the appearance of a mucoid tissue. Few cells exist in the radical region of the pulp. A few insignificant-looking odontoblasts are found, but the mass of the pulp seems composed of bundles of thick and thin connective tissue fibres, running in all directions, and separated at the periphery by large vacuoles.

If transverse sections through cervical and radical parts of the pulp be examined and compared, a great difference in structure will be noticed. In the former, in addition to the cells already mentioned, are great quantities of double-edged highly-refractive fibres, which are not connective tissue as is seen in the latter. They are probably nerve filaments. In fact, it would seem that the greater part of the body of the pulp is composed of nerve filaments.

With regard to the fine connective tissue fibres which are scattered generally throughout the pulp, it is probable that they serve not only as a stroma in which the cells are imbedded, but as a supporting framework to sling up the soft delicate pulp in its bony casing, in much the same way as marrow is supported in the medullary cavity of bones. These fine fibres appear not to enter tubules, but to be attached to the matrix of dentine.

The functions of the spindle-cells is probably a generative one—to produce new odontoblasts in places where the old cells have been modified by the advancing line of freshly-deposited dentine. The round cells would seem to have a secretive property, in cases where secondary dentine nodules, or calcareous degenerations are taking place, in addition to the all-important function of laying down the matrix of dentine in developing teeth. *These* cells, then, should be called odontoblasts.

In conclusion, these researches and arguments tend thus to show what probably are the functions and uses of the cells of the pulp ; but it is at present impossible to say absolutely that this view is right and scientifically correct. But until they are disproved we may, I think, believe that the building of the dentinal wall of the pulp does not depend on the integrity of the odontoblasts, but on the functions of the small secretory cells of the pulp proper ; and that while the former are active agents, governing and protecting, as sense organs or end bulbs, its interior, their duties only ending at the death of the pulp, the latter are more passive agents, serving merely for mechanical purposes by secreting matrix or new bone formations during the life of the tooth.

Gentlemen, allow me to thank you heartily for your kind attention to my communication. The subject is very technical, but I trust that it has been made an interesting one for all present.

A celluloid disk placed at the back of any sand-paper disk stiffens it materially and is a great improvement. By holding a smooth burnisher on the smooth polished surface of the celluloid when polishing a gold filling the disk can be bent and pressed into any uneven surface without destroying it, thus avoiding the trouble and annoyance of changing so frequently. A celluloid disk can be placed between two sand-paper disks back to back and used to advantage.

D. V. Beacock.

British Journal of Dental Science.

LONDON, DECEMBER 15th, 1893.

THE GENERAL MEDICAL COUNCIL.

We publish on another page a report of that part of the Council's proceedings, which is of most interest to our readers. The recent session occupied seven days, but the amount of business to be encountered seemed likely to preclude much attention being paid to dental affairs. We are, however, extremely glad to find that most of the matters previously considered by the Executive Committee were brought up and dealt with. The first point was in connection with "covering," and it was only to be expected that the Council should proceed with due caution in the case presented, the first, we believe, since the issue of the warning. It was not one of the simplest kind, but if the Council were able to come to the conclusion that the sale of a practice to an unregistered man is within the sphere of covering, it should render proceedings in the more ordinary cases a mere matter of form. It seems hardly probable, however, that this question is the one which is to be further discussed, and yet to our mind it would be the most logical. The defence, so far as we can understand it, is that having (legally) sold a practice, the seller cannot prevent the purchaser keeping up, or replacing, the original name.

Another matter dealt with is really of great importance, as illustrating the attitude of the Council. That the resolution proposed by Mr. Brudenell Carter should not have been met with apathy, or even opposition, shows, as we have frequently pointed out, that the Council may be relied upon to do its best for the interests of our Profession. If the Council finds itself able to restrict dental advertising to a mere mention of name and address, its action will meet the wishes of all those who are anxious to see the practice of Dental Surgery placed upon a proper footing. It will, indeed, at once place it on a higher level than that attained in general medical practice. At present we are of opinion that it will not be an easy matter, and we are not surprised to find that it was considered prudent to refer the resolution back to the Executive Committee, in order to obtain an opinion from the proper legal advisers. It is certainly too sweeping an assertion which includes all the advertisers in a statement that they wish to possess the privileges of a profession as well as the freedom permitted to a trade. Many who care nothing for the former found themselves almost unconsciously, or perhaps unwillingly, forced to place their names upon a Register. Nothing, however, was said about advertising, and a strict interpretation of the Act which claimed men who were so conducting their practice at the time, might possibly result in a maintenance of the *status quo ante*. If the referred resolution is ultimately passed it will constitute an analogous "warning" to that issued in respect of covering, and the combined use of these two weapons will do much to "purge the Register." But do those who make use of the expression foresee the fresh difficulty which awaits them? It is not enough that a man shall have his name erased from the Register and be unable to call himself "Dentist." This has already been tried, but such an one is still able to practise, and in the golden time to come when coverers and advertisers have been removed from the list they will be with us, although not of us. With a free hand for advertising, and a careful use of terms, the public are still likely to accept them and to ignore the nice distinctions which we would have them appreciate. Until clause 3 of the Act has been tried and found wanting, other methods of protecting the public (or, as some would have it, *ourselves*) can only be regarded as light skirmishing. The Council is not concerned with the interpretation of clause 3; but it is a matter for satisfaction to find that so far as the Register is concerned we are in good hands.

There was not a full attendance at the recent sitting; in some of the divisions as many as ten members were absent, but the reference back to the Executive Committee will give them ample time for reflection, and we must wait with patience for the next meeting, when something may also be forthcoming with regard to the new Dental curriculum in Ireland. The correspondence between Mr. Tracey and his solicitor on the one hand, and the solicitor and registrar of the Council on the other, has been disposed of; the latter were instructed to take no further notice of Mr. Tracey's communications.

GLASGOW DENTAL HOSPITAL.—We are glad to hear that a Students' Society has been formed in connection with this Hospital. Such an organisation should really be regarded as an essential part of the teaching arrangements in connection with the Schools. By affording the opportunity for the presentation of "Casual Communications" it stimulates a student to take notes of unusual cases; and by tempting the members to prepare papers and take part in discussions, it educates them for professional meetings later on. At the Glasgow Society, on the 22nd ult., a paper on "Crown Work" was read by Mr. W. Bruce Hepburn, who also showed some well-executed specimens.

Slip a rubber tip, such as is used on the little glass drop tubes, over point or face of your small rivetting hammer, tie it fast with a piece of wire twisted round; you can hammer away at a plaster model without defacing it, when fitting in an air chamber pattern or any piece of gold, or other metal, to the model.—D. V. BEACOCK, *Dom. Jour.*

Manipulative Miscellany

It is requested that all new instruments or articles which it is wished to have described under this heading, be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute owards this end.

KALIUM NATRIUM.—We have received from Messrs. Jamieson a packet of this combination of Potassium and Sodium. It is prepared by Dr. Schreier, of Vienna, who read a paper at the Chicago Congress upon "The Treatment of Infected Root Canals" with this substance. In the root canal is a putrescent mass consisting of water and the decomposed products of albumen, consisting especially of fats and fatty acids. Upon the application of Kalium-Natrium, the watery part is decomposed with the evolution of heat. Hydroxides of the metals are formed which, in combination with the fat of the Pulp, form a soap. The theory also provides for the cleansing of the dentinal tubuli, and a general sterilization of the root canal without discolouring or injuring the tooth-substance. Care must be taken in making the application; our own experience, so far, has been satisfactory. In the first case, in an abscessed upper lateral, the contents of the canal were easily brought away in a liquified condition; perhaps as a result of a too free application there was slight pain, but the abscess disappeared and the tooth has been perfectly comfortable since.

Reviews.

An Appointment Book.—Messrs. Bale and Sons issue a very conveniently arranged book for Dental Surgeons. Besides the usual almanac, and other information, there is an enumeration of the various dental Societies and hospitals throughout the kingdom; there is also a selected list of practitioners arranged under the heads of the cities or towns in which they reside. In the main body of the book two pages facing each other are divided up into spaces for the six working days of the week, then follow two similar pages for memoranda in between, and so on throughout the year. Each day is marked off into half-hour appointments from 9 a.m. till 6 p.m. The book is interleaved with blotting paper.

We have also received, from Messrs. Wright, of Bristol, a copy of an improved visiting list for the use of physicians, surgeons, and consultants.

Abstracts of British & Foreign Journals.

PREPARATION OF AMALGAM.

By Dr. Mayr.

My process is simply this: With a well-ignited coal-fire in my laboratory stove,—or better, with a charcoal fire,—the crucible, first rubbed over the inside with borax, is gently heated and the tin melted first, then the silver is added in small pieces, then the melting mass, which is kept at as low a temperature as possible, is stirred with a clay pipe-stem or an oak stick. As soon as the silver is melted, the gold or copper, whichever is used, is added,—the copper in the form of wire rolled as thin as possible. As soon as the melting is complete it is quickly turned into a cold ingot mould ; then all that remains is to file with a somewhat coarse file, and remove bits of steel with a magnet, and the alloy is ready for use.

Two formulas, which I make constant use of, are given,—viz :

Silver ...	... 55 parts.	Silver ...	... 45 parts.
Tin ...	... 40 „	Tin ...	... 45 „
Copper ...	... 5 „	Gold ...	... 10 „

One gives a black amalgam, the other a light-gray ; both have good edge-strength, shrink but little, and take a good polish. I have made many others, but these are my main reliance.

The four metals named are the only ones I consider of value. Platinum seems to me to be nearly or quite inert, and zinc, while it gives whiteness, gives also a greasy feel which I detest, and I suspect it tends to cause weak edges and the spherical form in crystallization. Of the latter I am not definitely certain, but do not now use it in my alloys.

International Journal.

GUTTA-PERCHA AS A ROOT CANAL FILLING.

By S. Freeman.

After thoroughly treating and drying the root-canal, take a Dunn's syringe with a platina point, and inject a drop or two of a saturated solution of hydronaphthol and chloroform in the root canal. Then take a gutta-percha cone, place it in the canal as near the apex as possible, where it dissolves ; in other words make the chloro-percha in the root, then follow this with one cone after another until the canal is entirely filled. If any "chloro-percha" passes through the apex of the root, it no doubt becomes encysted. I have never had any trouble arising therefrom, and I am positive that I have passed some through the apex, because the patients have noticed it by describing to me a slight stinging sensation, which quickly subsides, and no future trouble arises, I have employed this method for a number of years, first using iodoform and chloroform instead of hydronaphthol and chloroform. I find this method simple, clean, antiseptic, and effective.

International.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, November 6, 1893. Mr. Robert Woodhouse, M.R.C.S., L.D.S., Vice-President, in the Chair.

The Minutes of the previous meeting were read and confirmed.

The following gentlemen signed the Obligation Book and were formally admitted as Members by the Chairman :—Messrs. H. L. Briault, C. J. Tisdall, G. Northcroft, E. F. Smith, and H. J. Stevens.

The CHAIRMAN announced that he had received Obligation Forms, duly signed, from the following gentlemen:—Richards F. W., of Birmingham; Shiach, G. R., of Elgin; and he declared them admitted as Non-Resident Members of the Society.

Mr. CHARLES FREDERICK SUTCLIFFE, L.D.S. Irel., of 15, Victoria Terrace, South Shields, was balloted for and elected a Non-Resident Member.

The LIBRARIAN reported that since the last meeting the following books had been presented to the Library by their authors :—"Diseases and Injuries of the Teeth," by Messrs. Morton Smale and J. F. Colyer: "Anæsthetics and their Administration," by Dr. Frederic Hewitt, and "Des Fistules d'Origine Dentaire," by M. Camille Tellier, of Paris, and that the following books, &c., had also been received :—*Journal of Anatomy and Physiology*, *The Journal of Bacteriology*, *Guy's Hospital Reports*, "Calendar of the Royal College of Surgeons," and the usual journals.

Mr. STANLEY BOYD reported a Case of Resection of the Symphysis of the Lower Jaw," the parts being retained in position by the insertion of a bar of silver wire. He said the patient was a woman, aged 61: she was married, and had never been pregnant. There was nothing in the family history throwing any light upon the case. There was no history of syphilis; she had always been perfectly temperate, and had worn dentures for many years, the lower ultimately inducing an epithelioma. The mouth had always been tender. The clinical interest of the case depended upon the facts that she had had extensive leukoplakia on the tongue for fourteen years. She could never eat hot food or drink spirits, but in spite of being unable to eat or drink these things she had developed leukoplakia, which was regarded as being often dependent upon such practices. For fourteen years she had had these patches on her tongue, which had always been very sore, and they gradually spread over the anterior two-thirds of the dorsum ; potash tablets seemed to relieve the soreness. Thirteen years ago all her teeth became loose, and fell out one after another ; she never had any prolonged illness, nor was it preceded by any illness, but simply the teeth became loosened one after the other and all dropped out. That would be before she was 50 years of age. Three or four months ago one of the leukoplakial patches on the dorsum of the tongue developed into an epithelioma on the right side. About six weeks ago she noticed that her lower plate hurt her just behind the jaw, and she found a white-surfaced, warty growth in the hollow between the frænum and the jaw, creeping on to the lip. This was the more extensive epithelioma of the two, and possibly had been in existence before the one on the dorsum of the tongue. When she came to Charing Cross Hospital there were leukoplakial patches over two-thirds of the tongue, with a round-edged epitheliomatous ulcer on the right side of the dorsum of tongue. It did not infiltrate to any extent, so that the movements of the tongue were quite free ; but underneath the tongue, between the frænum and the jaw, there was an epithelioma which infiltrated deeply ; it inhibited the movements of the tongue in that region to a certain extent, and so firmly bound it to the symphysis menti that with a finger inside and another outside and underneath, the mass could not be moved apart from the jaw, and the sub-mental gland could not be felt. It could not, therefore, be said whether it was enlarged, though it was likely that it would be. There were no enlarged glands in the submaxillary region that could be felt, but there was some tenderness in those regions. She was toothless. There were no enlarged parotid glands. With regard to the operation, Mr. Boyd cleared out, as a matter of principle, both sub-maxillary regions through the curved incisions usual in ligature of the lingual. The glands were cleared out, although they could not be felt. Even if there had not been the evidence of tenderness he believed that that ought to be done. The curved incisions were made to meet behind the symphysis of the jaw, and there he was able to get at the sub-mental glands and clear them out. The single incision now ran up through the lip ; the soft parts were stripped back rapidly from the jaw as far as the bicuspid regions. The jaw was then sawn through, and the whole symphysis removed; the epithelioma, the floor of the mouth, and the anterior half of the tongue were removed, and also the submental gland. A spanner of silver wire was then inserted (and this was the point that he wished particularly to bring forward) from one side of the jaw to the other, simply drilling a hole with an ordinary bradawl backwards into the jaw, and bending the wire so that it ran in along the length of the jaw. Thus any pressure exercised by the skin and scar contraction upon the wire bridge would tend only to drive the wire further into the jaw. There was, of course contraction from side to side, and it might be the resistance of the wire would force it out, but it would be a very long time before that would happen. Probably the slight irritation would simply cause thickening of the bone. He was able also to use the spanner to tie the tongue to, putting a ligature through the front of the tongue and tying it on to the wire. That held it in position, and during the time when there was danger of the tongue dropping back on account of the division of the genio-glossi, and genio-hyoglossi, this suture acted in their stead. The wound healed well; the only result complained of was that owing to lack of epithelium in the anterior half of the floor of the mouth, scar contraction had gone on, and the upper lip dropped over the lower; but on raising it and looking at it from the side, it showed a very fairly shaped chin of remarkable firmness.

Mr. Stanley Boyd also mentioned an operation performed on a man on the previous Saturday, in which two spanners were used, so as to deepen the chin and still further hold the lip up, and he hoped by that means not to have so much dropping back of the lip, although in that case also he had had to remove the floor of the mouth very freely owing to recurrent epithelioma.

Mr. S. J. HUTCHINSON asked how long the wire had been in its position in the first case mentioned.

Mr. STANLEY BOYD said five weeks. It was quite buried.

Mr. HUTCHINSON said with regard to fixing a denture Mr. Stanley Boyd had demonstrated how very simple it was to put in this silver wire, and how well it had resigned itself to its circumstances. He suggested whether that step might not be carried a little further, and by making a denture with two silver wires projecting at each end it could be inserted in the bradawl holes in the jaw itself and thus the whole thing be held in place as a permanent fixture to keep the lower lip from being contracted and the ends of the bone from coming together. Of course, this was a very experimental process, but seeing that the silver wires remained there without causing any irritation, he saw no reason why a vulcanite plate with two silver wires projecting from the ends could not be equally well embedded into the projecting ends of the bone. The result of the case exhibited was extremely satisfactory, and the Society was very much indebted to Mr. Stanley Boyd for bringing it before them. The tongue was tied with a silver wire as a subsequent part of the operation, and he suggested that the addition of a vulcanite plate would be a still further elaboration of the very successful operation which had been performed.

Mr. PATERSON asked Mr. Boyd if he would kindly inform them as to the result of the case that he had brought forward last year, in which use had been made of a knitting needle. He had seen two cases of treatment of resection of the jaw in the way Mr. Stanley Boyd had described, without the use of any spanner at all, and of course the result was deplorable. The jaw came together in the middle line like a V, and if there was any anchylosis following it was absolutely beyond all treatment. He asked whether there was some possible necrosis in the present case, for he had noticed just a suspicion of crepitus.

Mr. STANLEY BOYD said with regard to the case brought forward last year, the knitting needle was not put in with the intention of keeping it *in situ*, but simply until the denture could be fitted. The girl always had pain, and he therefore endeavoured to take it out, but could not find it, probably because it had been loosened from the jaw and was surrounded by tense tissue in which it could not be felt. The girl, however, thought that he had taken it out, and was quite happy afterwards. She had a recurrence, and then he cut out the recurrence *plus* the needle, the needle being just black. With regard to the crepitus mentioned by Mr. Paterson, he (Mr. Stanley Boyd) certainly had not noticed it. He did not think there was any necrosis, and certainly hoped there was not.

NOTE.—Nov. 25. The patient has lately been examined under chloroform and the jaw manipulated freely, a gag being used on both sides. The wire was quite firm.—S. B.

Mr. ARBUTHNOT LANE brought forward a case of "Anchylosis of the left Temporo-maxillary Articulation with dwarfing of the Lower Jaw." The patient was in attendance, and models of the mouth were shown. The girl was 13 years old; when she was 2 years old she got a sting on her cheek. Some diffuse cellulitis followed, and from that time she was unable to move the jaw, which had been absolutely fixed ever since she was 2 years old. He found her in the Hospital for Sick Children, in the condition described, and later she was admitted into Guy's Hospital. The lower jaw was extremely undeveloped; the lower incisors were biting almost against the roof of the mouth, and there was no movement of any sort in the jaw. The left temporo-maxillary articulation was the only one affected. After the removal of a large portion of the condyle of the jaw, he was able to get a certain amount of movement. During the operation a hasty tracheotomy had to be performed as the breathing failed, and the mouth being closed, it was impossible to bring forward the tongue. Mr. Maggs saw the case and asked him to show it to the Society. He was rather in a difficulty as to the wisest course to be pursued. Two methods occurred to him, one being to cut across the ramus on both sides, to slide the lower jaw forward, and fix it with a couple of steel screws. Then, on the other hand, he thought of cutting the body of the jaw vertically on either side of the canine teeth, bringing it forward a quarter of an inch, sloping it, and fixing it with steel screws. He was looking forward with much interest to some suggestions on the matter.

Mr. W. A. Maggs said he had an opportunity of seeing the patient before and after the operation, and, as had been stated, there had been absolute fixation of the jaw from 2 years of age. The patient was only able to take food by passing it between the lower incisors and the palate, a slight space intervening. One of the causes of anterior protrusion of the upper incisor teeth is excessive development of bone in the pre-maxillary region, but in this instance a similar condition has been brought about by arrest of development of the lower jaw, to the effect of pressure in feeding, which latter has also caused flattening of the lower incisors. The faulty development of the lower jaw suggested by its appearance a want of mental development on the part of the child, but he was told that this was not so. With regard to the teeth, it is interesting to know their condition, inasmuch as they have never been used, properly cleaned, or indeed treated in any way. All the permanent teeth are erupted, excepting the left upper canine, and all the second and third molars. Several of them are carious interstitially, notably the upper incisors and one of the lower. The first dermanent molars, too, are decayed in the lower jaw to the level of the gum, so that when the jaw was fixed it was impossible to say that they were erupted at all. The result of the operation was, to his mind, very satisfactory, although he hoped that a little more space between the teeth would be gained in due time. With regard to the further treatment, he did not like to express any opinion, because he had not the least doubt that either of the methods suggested by Mr. Lane would still further benefit the patient. The only thing he would suggest was, whether pushing out the lower incisors, and drawing inwards the upper, as is done in regulation cases, might not effect the same purpose, although at a much slower rate. It would be very interesting to follow the case, and also to know from Mr. Lane whether he thought the lower jaw would become more developed with use, or whether it had attained its full development, even though in the future she might probably have the free use of the jaw.

The SECRETARY showed a rubber-dam holder sent by the President, and read the following description which accompanied it :—

"This rubber-dam holder is intended to hold back the free margins of the rubber, and at the same time to keep the rubber 'taut' in a vertical direction. It consists of a central flexible shaft, to each end of which is fixed a finger and thumb device. The arm or shaft is a spiral coil, such as we are familiar with in the dental burring engine (but might be made of other flexible material, such as whale-bone) ; it is four inches long. The finger and thumb device is a narrow strip of metal, bent upon itself near the centre, and forming a short upper limb, representing the thumb, and a longer under limb, representing the forefinger. Attached to the shorter limb by a hinge joint is a flange, on the lower side of which is an eccentric cylinder or roller, which on being depressed dips into a slot on the under limb, and grips and holds tight the rubber without danger of tearing it.

"This holder will, I think, be found useful in all cases ; specially useful in the application of the coffer-dam to teeth in the lower jaw ; easy of attachment ; comfortable in adaptation to the cheek ; capable of stretching the rubber without straining it ; and being readily applied with the finger-clamps at any angle will, I hope, prove itself a welcome means of securing more light and freedom of action in molar cavities than we have hitherto enjoyed in using any of the rubber-dam holders at present on the market."

A discussion on Mr. Smith's paper followed, which we are compelled to hold over for want of space until the next number.

Dental News.

GENERAL MEDICAL COUNCIL.

The following is a report of the Dental business transacted by the Council at its recent meeting.

General Medical Council, held on December 2nd, Sir Richard Quain, Bart., in the chair.

THE CASE OF MR. CHRISTOPHER PALMER.

In this case, Mr. Christopher Palmer, registered as in practice before July 22nd, 1878, was summoned to appear before the Council on the charge of acting as cover of, and by permitting the use of his name enabling an unqualified person named Frederick William Rose to carry on the business of a dentist, and to practise as if he were duly qualified and registered, such practice being carried on in Palmer's name at Houndsgate, Nottingham.

The case had been considered by the Dental committee, who reported that Frederick William Rose, an unqualified person, carried on his practice at Houndsgate, Nottingham, retaining Mr. Palmer's name on the premises, and practising in Palmer's name. The case was brought to the attention of the Council by the London and Counties Medical Protection Society, Limited; several affidavits in support of the complaint were put in. Mr. Palmer denied the charge, and stated by letter that he sold the business to Rose at the beginning of the year, at which time all his signs and advertisements were painted out, and he had done all he could to have his name withdrawn from the premises. The Committee recommended the Council to postpone the case for further explanation by Mr. Palmer.

Mr. Palmer did not appear, and

Mr. Farrer, the Council's solicitor, said he had a letter from Mr. Palmer saying that he could not attend. He did not either appear before the Dental Committee. The fact of his non-attendance was of the less consequence because the Committee who found the facts recommended the Council to postpone the case for further explanation by Mr. Palmer. The only fact really found was that Palmer sold his business to an unqualified person named Rose. Rose had continued to have Mr. Palmer's name up as he understood, but Mr. Palmer said he had done his best to stop him. Mr. Muir Mackenzie was asked at the Committee whether there was any legal mode open to Mr. Palmer to put a stop to this, and he replied that he did not think there was, whereupon Mr. Hugh Woods, the Secretary of the complaining Society, went away apparently satisfied that the case was not at present ripe for him to push any further. He asked the Council if under the circumstances they would adopt the recommendation of the Committee that the case be postponed for further explanation by Mr. Palmer.

This course was agreed to on the motion of Sir William Turner, seconded by Mr. Wheelhouse.

December 5th.

Sir Richard Quain, Bart., President, in the chair.

DENTAL ADVERTISING.

Mr. **BRUDENELL CARTER** moved that "The attention of the Council having been called to the practice of advertising as pursued by certain Dentists, it is hereby declared that, while the Council will not at present interfere with this practice so long as it is confined to a mere notification of the place of abode and the profession of the advertiser, yet that the publication of a scale of charges, or the issue of advertisements containing claims of superiority over other practitioners, or unfair depreciation of them, will be regarded as an offence with which the Council will be prepared to deal, and which may easily be carried so far as to constitute infamous or disgraceful conduct in a professional respect." He said he thought he need not detain the Council many minutes. It would be remembered that the Council laid down a declaration of policy with regard to questions of covering before it proceeded to the question of a penalty for the offence. Many irregular dentists who now issued exceedingly objectionable advertisements, and who would seem to wish at once to possess the privilege of belonging to a profession and the freedom which was permitted to a trade, must, he thought, be warned in some way or other that the business was an improper one, and that the class of advertisements which any of them were issuing were such as to call for the interference of the Council. A declaration of the kind practically bound the Council to nothing more than to consider any charge of objectionable advertising brought before it, together with issuing a warning that such advertising was so objectionable as to call for a penalty. He begged to move the resolution.

Sir DYCE DUCKWORTH begged leave to second the proposal. He thought the statement made by Mr. Brudenell Carter rendered the meaning of the motion unmistakable. The public were demoralized, and the Dental profession greatly disgraced by the quantity of those advertisements to be seen in all parts of their large cities and towns, emanating from a class of people who had been hitherto almost artisans, but who had suddenly put into the ranks of the profession and had come on to the Register, and as yet they did not appear to know what position they occupied. It would be a great injury to the reputable and worthy members of the Dental profession if the names of the people to whom he referred must be retained on the book. They might feel quite sure that the Dental profession in that country would never occupy the position it ought to do until the nefarious practices of the class of persons he had been speaking of were done away with, yet the time would very soon come when it would be within the scope of the work of the Council to visit very strongly the cases of gross professional offence which were so rife. Just as in the Veterinary profession, so long as the members of the profession were to so large an extent as they were blacksmiths, so long must veterinary medicine in the country remain in a very degraded and disgraceful state. And not until a divorce took place between the forge and the scientific veterinary medicine and surgery should we have a proper school of veterinary medicine or surgery. So it was with Dentists, so long as those offensive advertisements were about, which were a disgrace to the profession, so long the profession would never hold the position which it ought to do, and which some day, by the action of the Council, they hoped it would hold. They must notice a contrast in the conduct of the Council. Some people were, if anything, a little too severe in judging upon the question of examination standards, and the same critics would tell them that, if anything, they were a little too lax in dealing with matters of disgraceful conduct. He thought in all those cases the time had not yet come, but he hoped it would, when the Council would have the courage of its opinions, and would deal with those matters very sternly indeed. The time was rapidly coming when they must take such steps, and he hoped it would be intimated to all who were guilty of the conduct, that they would not be allowed any longer to practise in the way they had been doing, and that the Council would be prepared to deal very sternly with them.

Mr. WHEELHOUSE asked if it would not be well in the last line to take out the words, "or disgraceful."

Mr. BRUDENELL CARTER said they were in the Act of Parliament.

Dr. MAC ALISTER quite agreed with the remarks that Mr. Brudenell Carter had made, but in the case of the famous definition of covering with regard to Dentists they took the precaution to let their lawyer look into it, because it did seem very much like a judgment in advance, and it was extremely necessary that they should, in issuing any notice to Dentists, with regard to advertising, say that they were within the limits of their Statutes. He should like to ask whether the question had been submitted to their lawyer. If not, he should move as an amendment that it should be so, that they might make the definition in such a form as might not be objectionable, if any judgment was appealed against.

The REGISTRAR said the Council's lawyer had made a statement before the Executive Committee.

The PRESIDENT asked to what effect?

The REGISTRAR said as far as he remembered it was to the effect that the Council could hardly take it up and declare it to be infamous in a professional respect.

Mr. BRUDENELL CARTER said the resolution was communicated to them by the Executive Committee. He observed that Clause 3 of the Resolution dealt with advertising only. It appeared to him that advertisements such as he had described might easily be carried so far as to constitute infamous conduct. It did say that it did so, but it might be so. It left it to the Council to judge in individual cases.

Dr. MAC ALISTER said he should like to move an amendment, that that definition, which seemed an admirable one, should be referred to their legal advisers before they acted upon it.

Mr. BRUDENELL CARTER said he had not the slightest objection, if Sir Dyce would agree to it, that it be referred to the Executive Committee for submission to the legal advisers of the Council.

Dr. MAC ALISTER's suggestion was agreed to by the Council, and the matter dropped.

The PRESIDENT said he had received two telegrams from the British Dental Association, highly approving of the resolution, and asking that the Council would pass it. Of course the matter must be left now where it was, and be referred to the Executive Committee for advice from the Council's lawyer.

THE DENTAL HOSPITAL OF LONDON.

The Annual Dinner of the Staff and Past and Present Students was held at the Hotel Metropole on the 2nd inst. J. W. Hulke, Esq., F.R.S., President of the College of Surgeons, was in the chair, and a large and representative number of Students and friends of the School was present.

The loyal toast having been duly honoured, the Chairman proposed "The Past and Present Students," and in the course of an able speech contrasted the present status of the practice of Dental Surgery with what he remembered during his apprenticeship in a small country market town. His early experiences recalled the blacksmith who was expert in the use of an instrument known as "the pelican;" there were also the itinerant tooth-pullers accompanied with drum and horn. In those days no conservative treatment was thought of. Interesting references showing that King James I, amongst other curious undertakings, was pleased to play the part of amateur dentist, are to be found in some old accounts according to which, payments of one, two, or three shillings were made to persons for allowing the King to pull a tooth, or "bleed" them. In his concluding remarks Mr. Hulke alluded to the distinguished position the Dental Hospital of London had always taken.

Mr. T. S. CARTER, whose name was coupled with the toast, expressed his pleasure in responding on behalf of the Past Students. In their name he recorded the strong feeling of loyalty which they had for the Hospital where they gained their practical experience, and for the Royal College of Surgeons, represented that evening by its worthy President. At the Hospital they obtained the knowledge which enabled them to become successful practitioners, and at the College of Surgeons the diploma which had given them their social position. Their feeling was therefore one of obligation. As past students they were always pleased to meet again, and the speaker trusted they might have further opportunity of meeting in good-fellowship in the future.

Mr. W. T. **May** responded for the Present Students, and alluded to the various clubs formed for physical and mental recreation.

Mr. **Stanley Boyd**, the Dean of Charing Cross Hospital, proposed "The Dental Hospital and School." He thought there was ample room in London for all the Dental Hospitals, and expressed his admiration of the way the Staff and Students had come to the assistance of the School in the endeavour to provide increased accommodation. They had a Dean, who was a model Dean, who was daring in his ideas for the School's advantage, and who carried them out with success. Then they had an admirable Secretary, and a Staff the most brilliant of its kind in Europe, who regarded the Students' success as their own success. Lastly, the students were some of the best he had ever met. He had not the slightest doubt as to the future of the school.

Dr. C. J. **Hare**, in responding for the Hospital, alluded to the disadvantages due to want of proper accommodation, but expressed the opinion that the Dental Hospital would be to the front of all similar institutions, not only in England but also on the Continent.

Mr. **David Hepburn** said he was proud to rise and respond to the toast of the Staff, and was particularly pleased that the Hospital and School were coupled together. The Hospital could not exist without the School, and the teaching could not be carried on without the Hospital. They happened to have been founded by a very wonderful set of men, and as time went on there had been no reason to disassociate them. At that period there had been no systematic training and the originators of the school made their own way by their own unaided exertions. It behoved the new generation not only to keep up the old traditions but to go ahead in the right direction. The speaker alluded to the retirement, after thirty years service, of Mr. George Gregson, whose name was received with loud applause. With regard to other, similar, institutions, Mr. Hepburn said they welcomed rivals with open hands. The new schools were a means of furthering the interests of the profession. Much of the goodness of the school depended upon one worthy officer, and when he mentioned the worthy Dean, he felt that their debt of gratitude to him could be but feebly expressed. As to the improved status of the Profession, much might be done, no doubt, by Acts of Parliament, but the speaker thought that the best method was to flood the country with rightly prepared, and rightly minded professional men. On the question of training in Dental Mechanics, Mr. Hepburn spoke with approval of the old-fashioned method of apprenticeship but thought it might be well supplemented by systematic teaching in a School.

Mr. R. H. **Woodhouse** cordially proposed "The Visitors," and Dr. Sidney Coupland responded in a witty speech.

The final toast was that of "The Chairman" proposed by Mr. **Storer Bennett.**

During the evening, and between the speeches, the company were entertained with songs by Messrs. Fred Cozens, F. Breeze, W. H. Clarke, recitations by Mr. Frank Braine, and some really remarkable whistling by Mr. Tom Browne.

To Correspondents.

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